COMBAT FLEETS OF THE WORLD

1986/87



Their Ships, Aircraft, and Armament

COMBAT FLEETS OF THE WORLD 1986/87

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Their Ships, Aircraft, and Armament

JEAN LABAYLE COUHAT

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TERMS AND ABBREVIATIONS

Most ships' characteristics are given in the following sample:

Bldr Laid down L In serv. 15-5-65 D 602 SUFFREN Lorient 12-62 1967

D: 5,090 tons (6,090 fl) S: 34 kts Dim: 157.6 (148.0 pp) \times 15.54 \times 7.25 (max.) A: 1/Masurca system (II \times 1) —4/MM 38 Exocet —2/100-mm, Model 1953 $(I \times 2) - 4/20$ -mm AA $(I \times 4) - 1/M$ alafon system (13 missiles) -2/Mcatapults for L-5 torpedoes (10 torpedoes)

Electron Equipt: Radar: 1/DRBI-23, 1/DRBV-50, 2/DRBR-51, 1/DRBC-32A, 1/DRBN-32

Sonar: 1/DUBV-23, 1/DUBV-43—SENIT-1,2 Syllex systems

M: 2 Rateau double-reduction GT; 2 props; 72,500 hp Boilers: 4 multitube, automatic-control; 45 kg/cm², 450°C

Electric: 3,440 kw (2 × 1,000-kw turbogenerators, 3 × 480-kw diesel alternators)

Range: 2,000/30; 2,400/29; 5,100/18 Man: 23 officers, 164 petty officers, 168 men

Ships' hull numbers and names are in capitals and small capitals. Hull dimensions are in meters, calibers in millimeters, speeds in knots, ranges in nautical miles; speeds and ranges of aircraft are in kilometers/hour and kilometers, unless otherwise indicated.

Displacement. In most cases, standard displacement, as defined by the D: Treaty of Washington (1922), is given. Where possible, full load (fl) is given; otherwise, normal (avg) displacement or trial displacement is given. In the case of most submarines, two displacements are given: the first figure is surfaced displacement; the second is submerged displacement. When available, the figure for standard displacement precedes the surfaced and sub-

merged figures.

S:

Speed. This is given in knots and generally refers to maximum speed; in some cases trial speed is given. For submarines, surfaced speed is given first

and is followed by submerged speed.

Hull dimensions are given as follows: length overall × beam × draft (full Dim: load, unless otherwise stated). Length between perpendiculars is given as "pp"; length at the waterline as "wl." In cases where two figures are given for one of the dimensions, e.g., the beam of the flight deck and of the hull of an aircraft carrier, the hull measurement is given as "hull."

Armament. Number of guns/bore diameter; or number of torpedo tubes or A: launchers with diameter. Figures in parentheses show the number of mounts and whether they are single, double, triple, etc.; e.g., (III × 2) indi-

cates two triple mounts.

Machinery. Geared turbine is shown as GT; in some cases, the type or M: manufacturer of turbine is given, e.g., Parsons, etc. COSAG, CODAG/ CODOG, COGAG/COGOG are used when such combinations of machinery have to be shown. "Props" indicates propellers. "CP" indicates controlla-

ble-pitch.

In most cases, number and type are shown. Steam pressure is expressed in Boilers: kilograms/square centimeter and steam superheat in degrees centigrade.

Electric generating power, in kilowatts (kw) or kilovolt-Amperes (kVA). Armor protection, thickness given in millimeters. Electric:

Armor:

Cited in nautical miles at a given speed. Range:

Ship's company. Where not broken down into "officers" and "men" (i.e., noncommissioned personnel), a total complement figure is given as "tot."

Dates: Dates are given in the following sequence: day-month-year.

Armament AA Antiaircraft A & C, AT & Ch Shipbuilding yard (Atelier & Chantiers) AAW

Anti-war warfare Action Data Automation Weapon System

ADAWS AEW

Airborne early warning Anti-radiation missile ARM ASM Anti-ship missile Ast Nav Shipyard (Astilleros Navales)

ASW Antisubmarine warfare Author. Authorized

Average, normal BB Boatbuilding Bldr

BPDMS Basic Point Defense Missile System

BW Boat Works BY Boat Yard

CAAIS Computer-Assisted Action Information System CH, Ch Nav Builder, shipyard (Chantier, Chantier Navals)

Close-In Weapon System (U.S.) Naval shipyard (Cantière Navale) CN, Cant Nav

COGAG/CODAG/COSAG/ COGOG/CODOG

D

LF

loa

nrt

N.S.

Carrier Onboard Delivery Combined propulsive machinery systems, gas turbine, diesel, steam. CO means combined, A means and, O means or. For example, CODOG means combined diesel or gas turbine

CP Controllable-pitch Displacement Depth charge d.c. Depth-charge thrower det. DD, DDM Dry dock, dry dock company (Dutch)

DECM Deceptive Electronic Countermeasures

Dim Dimensions DP Dual-purpose

DSRV Deep Submergence Rescue Vessel Deadweight tonnage dwt

ECM Electronic countermeasures **ECCM** Electronic counter-countermeasures

Electron Equipt Electronic equipment ELINT Electronic intelligence Engineering Eng

E/O Electro-Optical

Electronic support measures (i.e., passive EW) ESM EW Electronic Warfare

Frigate, guided-missile frigate FF, FFG Fire-control system f.c.s.

Full load Frequency freq.

FRAM Fleet Rehabilitation and Modernization (U.S.)

Forward fwd G.E. General Electric Company **GFCS** Gunfire-control system General Motors Corp. G.M. Gross registered tons grt GT

Geared turbine Guided Weapon System (U.K.) GWS High frequency Her Majesty's Dockyard HF HMDY H.S.A. Hollandse Signaal Apparaaten Horsepower hp IFF Identification Friend or Foe

Kilogram Royal Company (Dutch) Kon. Mij.

Kiloton kt Knots kts Kilovolt-ampere kVA kw Kilowatt Launched

LAMPS Light Airborne Multi-Purpose System (U.S.N. hel-

icopter) Low frequency Length overall

LRMP Long-Range Maritime Patrol (U.S.) M

Machinery

MAD Magnetic Anomaly Detection Manpower on board ship, crew, ship's company Man

Military Assistance Program (U.S. and allies) MAP MCM Mine Countermeasures Medium frequency MF Machine gun mg Millimeters mm MSC

Military Sealift Command Motoren and Turbinen Union MTU New Brunswick N.B.

Nuclear, biological, and chemical NBC

Naval dockyard NDY n.m. Nautical miles Net registered tons Nova Scotia

Naval Tactical Data System Navy Yard NTDS NY

Overall

PADLOC Passive/Active Detection and Location

PDMS Point-Defense Missile System

Between perpendiculars Passive Underwater Fire-Control System pp PUFFS

Replenishment-At-Sea RAS RDY Royal dockyard RL Rocket launcher

Revolutions per minute or rounds per minute rpm

Speed SAM Surface-to-air missile SAR Search and rescue SB Shipbuilding

Société Française de Construction Navale S.F.C.N. Ship's Inertial Navigation System SINS Submarine-Launched Ballistic Missile SLBM

SLEP SSBN SSM STIR SURTASS SY syst TACAN Service Life Extension Program
Nuclear-powered fleet ballistic-missile submarine
Surface-to-surface missile
Separate Track and Illumination Radar
Surface Towed Array Surveillance System
Shipyard
System
Tactical Air Navigation beacon

TACTASS
TASS
TT
tot.
VDS
VLS
Wks
wl

Tactical Towed Acoustic Sensor System Towed Array Surveillance System Torpedo tubes/launchers Total Variable-depth sonar Vertical-Launch System Works Waterline

CONVERSION TABLES

♦ METERS (m.) to FEET (ft.) based on 1 inch = 25.4 millimeters

| m | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------|-------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|---|--------------------|
| | ft. | ft. | ft. | ft. | ft. | ft. | ft. | ft. | ft. | ft. |
| _ | 22 222 | 3.28084 | 6.5617 | 9.8425 | 13.1234 | 16.4042 | 19.6850 | 22.9659 | 26.2467 | 29.5276 |
| 10 | 32.8084 | 36.0892 | 39.3701 | 42.6509 | 45.9317 | 49.2126 | 52,493 | 55.774 | 59.005 | 62.336 |
| 20 | 65.617 | 68.898 | 72.178 | 75.459 | 78.740 111.549 | 82.021 114.829 | 85.302 118.110 | 88.583 121.391 | 91.863 124.672 | 95.144 |
| 30 40 | 98.425 131.234 | 101.706 134.514 | 104.987 137.795 | 108.268 141.076 | 144.357 | 147.638 | 150.919 | 154.199 | 157.480 | 127.953 160.761 |
| | | BENEFIT STATES | CHECK LANDS | EEGSSSSS | | | | | 100000000000000000000000000000000000000 | |
| 50 | 164.042 | 167.323 | 170.604 | 173.884 | 177.165 | 180.446 | 183.727 | 187.008 | 190.289 | 193.570 |
| 60 | 196.850 | 200.131 | 203.412 | 206.693 | 209.974 | 213.255 | 216.535 | 219.816 | 223.097 | 226.378 |
| 70 | 229.659 | 232.940 | 236.220 | 239.501 | 242.782 | 246.063 | 249.344 | 252.625 | 255.905 | 259.186 |
| 80 | 262.467 | 265.748 | 269.029 | 272.310 | 275,590 | 278.871 | 282.152 | 285,433 | 288.714 | 291.995 |
| 90 | 295.276 | 298.556 | 301.837 | 305.118 | 308.399 | 311.680 | 314.961 | 318.241 | 321.522 | 324.803 |
| 100 | 328.084 | 331.365 | 334.646 | 337.926 | 341.207 | 344.488 | 347.769 | 351.050 | 354.331 | 357.611 |
| 10 | 360.892 | 364.173 | 367.454 | 370.735 | 374.016 | 377.296 | 380.577 | 383.858 | 387.139 | 390.420 |
| 20 | 393.701 | 396.982 | 400.262 | 403.543 | 406.824 | 410.105 | 413.386 | 416.667 | 419.947 | 423.228 |
| 30 | 426.509 | 429.790 | 433.071 | 436.352 | 439.632 | 442,913 | 446.194 | 449.475 | 452.756 | 456.037 |
| 40 | 459.317 | 462.598 | 465.879 | 469.160 | 472,441 | 475.722 | 479.002 | 482.283 | 485.564 | 488.845 |
| 50 | 492.126 | 495.407 | 498.688 | 501.97 | 505.25 | 508.53 | 511.81 | 515.09 | 518.37 | 521.65 |
| 60 | 524.93 | 528.22 | 531.50 | 534.78 | 538.06 | 541.34 | 544.62 | 547.90 | 551.18 | 554.46 |
| 70 | 557.74 | 561.02 | 564.30 | 567.59 | 570.87 | 574.15 | 577.43 | 580.71 | 583.99 | 587.27 |
| 80 | 590.55 | 593.83 | 597.11 | 600.39 | 603.67 | 606.96 | 610.24 | 613.52 | 616.80 | 620.08 |
| 90 | 623.36 | 626.64 | 629.92 | 633.20 | 636.48 | 639.76 | 643.04 | 646.33 | 649.61 | 652.89 |
| 200 | 656.17 | 659.45 | 662.73 | 666.01 | 669.29 | 672.57 | 675.85 | 679.13 | 682.41 | 685.70 |
| 10 | 688.98 | 692.26 | 695.54 | 698.82 | 702.10 | 705.38 | 708.66 | 711.94 | 715.22 | 718.50 |
| 20 | 721.78 | 725.07 | 728.35 | 731.63 | 734.91 | 738.19 | 741.47 | 744.75 | 748.03 | 751.31 |
| 30 | 754.59 | 757.87 | 761.15 | 764.44 | 767.72 | 771.00 | 774.28 | 777.56 | 780.84 | 784.12 |
| 40 | 747.40 | 790.68 | 793.96 | 797.24 | 800.52 | 803.81 | 807.09 | 810.37 | 813.65 | 816.93 |
| 50 | 820.21 | 823.49 | 826.77 | 830.05 | 833.33 | 836.61 | 839.89 | 843.18 | 846.46 | 849.74 |
| 60 | 853.02 | 856.30 | 859.58 | 862.86 | 866.14 | 869.42 | 872.70 | 875.98 | 879.26 | 882,55 |
| 70 | 885.83 | 889.11 | 892.39 | 895.67 | 898.95 | 902.23 | 905.51 | 908.79 | 912.07 | 915.35 |
| 80 | 918.63 | 921.92 | 925.20 | 928.48 | 931.76 | 935.04 | 938.32 | 941.60 | 944.88 | 948.16 |
| 90 | 951.44 | 954.72 | 958.00 | 961.29 | 964.57 | 967.85 | 971.13 | 974.41 | 977.69 | 980.97 |
| 300 | 984.25 | 987.53 | 990.81 | 994.09 | 997.38 | 1000.66 | 1003.94 | 1007.22 | 1010.50 | 1013.78 |
| 10 | 1017.06 | 1020.34 | 1023.62 | 1026.90 | 1030.18 | 1033.46 | 1036.75 | 1040.03 | 1043.31 | 1046.59 |
| 20 | 1049.87 | 1053.15 | 1056.43 | 1059.71 | 1062.99 | 1066.27 | 1069.55 | 1072.83 | 1076.12 | 1079.40 |
| 30 | 1082.68 | 1085.96 | 1089.24 | 1092.52 | 1095.80 | 1099.08 | 1102.36 | 1105.64 | 1108.92 | 1112.20 |
| 40 | 1115.49 | 1118.77 | 1122.05 | 1125.33 | 1128.61 | 1131.89 | 1135.17 | 1138.45 | 1141.73 | 1145.01 |
| 50 | 1118.29 | 1151.57 | | 1158.14 | 1161.42 | 1164.70 | 1167.98 | 1171.26 | 1174.54 | |

♦ MILLIMETERS (mm.) to INCHES (in.) based on 1 inch = 25.4 millimeters

| mm | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | in. |
| _ | | 0.03937 | 0.07874 | 0.11811 | 0.15748 | 0.19685 | 0.23622 | 0.27559 | 0.31496 | 0.35433 |
| 10 | 0.39370 | 0.43307 | 0.47244 | 0.51181 | 0.55118 | 0.59055 | 0.62992 | 0.66929 | 0.70866 | 0.74803 |
| 20 | 0.78740 | 0.82677 | 0.86614 | 0.90551 | 0.94488 | 0.98425 | 1.02362 | 1.06299 | 1.10236 | 1.14173 |
| 30 | 1.18110 | 1.22047 | 1.25984 | 1.29921 | 1.33858 | 1.37795 | 1.41732 | 1.45669 | 1.49606 | 1.53543 |
| 40 | 1.57480 | 1.61417 | 1.65354 | 1.69291 | 1.73228 | 1.77165 | 1,81102 | 1.85039 | 1.88976 | 1.92913 |
| | | | | | | | | | | |

| mm | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | in. |
| 50 | 1.96850 | 2.00787 | 2.04724 | 2.08661 | 2.12598 | 2.16535 | 2.20472 | 2.24409 | 2.28346 | 2.32283 |
| 60 | 2.36220 | 2.40157 | 2.44094 | 2.48031 | 2.51969 | 2.55906 | 2.59843 | 2.63780 | 2.67717 | 2.71654 |
| 70 | 2.75591 | 2.79528 | 2.83465 | 2.87402 | 2.91339 | 2.95276 | 2.99213 | 3.03150 | 3.07087 | 3.11024 |
| 80 | 3.14961 | 3.18898 | 3.22835 | 3.26772 | 3.30709 | 3.34646 | 3.38583 | 3.42520 | 3.46457 | 3.50394 |
| 90 | 3.54331 | 3.58268 | 3.62205 | 3.66142 | 3.70079 | 3.74016 | 3.77953 | 3.81890 | 3.85827 | 3.89764 |
| 100 | 3.93701 | | | | | | | | | |

CONVERSION FACTORS

| Meter | Yard | Foot | Inch | Centimeter | Millimeter |
|---------|--------------|--------------|-------------|------------|------------|
| 1 | 1.093 61 | 3.280 84 | 39.370 1 | 100 | 1 000 |
| 0.9144 | 1 | 3 | 36 | 91.44 | 914.4 |
| 0.304 8 | 0.333 333 | 1 | 12 | 30.48 | 304.8 |
| 0.254 | 0.027 777 8 | 0.083 333 | 1 | 2.54 | 25.4 j |
| 0.01 | 0.010 936 1 | 0.032 808 4 | 0.398 701 | 1 | 10 |
| 0.001 | 0.001 093 61 | 0.003 280 84 | 0.039 370 4 | 0.1 | 1 |

| Nautical mile | | Statute mile | | Meters |
|---------------|---|--------------|---|----------|
| 1 | = | 1.151 52 | = | 1 853.18 |

• Boiler working pressure

Kilogram per square centimeter (atmosphere)

Pounds per square inch

0.070 307

 $\begin{array}{l} \text{equivalent} \to \\ \leftarrow \text{equivalent} \end{array}$

14.2233

 \blacklozenge Conversion for Fahrenheit and centigrade scales

1 degree centigrade = 1.8 degrees Fahrenheit 1 degree Fahrenheit = 5/9 degree centigrade t °F = 5/9(t – 32)°C. t °C = (1.8 t + 32)°F.

♦ Weights

1 kilogram = 2.204 62 pounds (av) 1 pound = 0.453 592 1 ton (metric) = 0.984 21 ton 1 ton = 1.016 05 metric ton

• Power

1 (CV) = 0.986 32 horsepower (HP) 0.735 88 kilowatt (Greenwich) (75 kgm s) 1 horsepower (HP) = 1.013 87 (CV) 0.746 08 kilowatt (Greenwich)

PREFACE TO THE ENGLISH LANGUAGE EDITION

This year's edition of *Combat Fleets* comes in a new format to improve ease of handling, keep production costs within bounds, and, frankly, to ease the strain on the bindings. The same column width has been retained, so that the photography remains as large as possible. Even so, the book has grown again, both a testament to the over 7,000 photographs that were forwarded by contributors from around the world for illustration or research purposes and because of the continued proliferation of new naval and quasi-naval ships and aircraft.

The 1986/87 Combat Fleets adds descriptions of the forces of half-a-dozen "fleets" that have sprung into existence over the last two years. Well over 80 percent of the photos are new, and the total has reached over 3,000. New line drawings by Robert Dumas, Louis Gassier, and myself have been added. Every effort has been made to make the book an accurate reflection of the fleets of the world on 1 January 1986, although it must be recognized that the developments of the last few months of 1985 will not have been reported in their entirety prior to the closing of the main text pages. Therefore, an

addenda with both photos and text is attached.

Users are directed to the Terms and Abbreviations sections on the previous pages; a short study will assist in understanding the condensed data format used in the book. Conversion tables between the English system and the metric system employed here are also given. One deviation has been made from the metric system, however: Because so many of the users are U.S. citizens, displacements for U.S. Navy ships have been retained in long tons of 2,240 lbs. For those seeking to make comparisons between a U.S. Navy ship and, say, a similar Soviet vessel, it will be necessary to convert the U.S. displacement to metric by multiplying by 1.01605 or by converting the metric displacement to English long tons by multiplying it by 0.98421. The volume concludes with an index to all ship names (and also class names for the navies of the People's Republic of China and the U.S.S.R.) used in the book. Major naval weapons systems, sensors, and aircraft are described at the beginning of each country-of-origin entry.

To avoid offense to any of the large number of contributors of information and photography to Combat Fleets, they will all be listed together alphabetically in the succeeding paragraph. However, Leo and Linda Van Ginderen, of Antwerp, Belgium, must be given special mention. The majority of the new photos in Combat Fleets 1986/87 come from their vast and constantly updated collection, and they have been incredibly generous in sharing their materials and knowledge. Combat Fleets would have been

impossible to produce without them.

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The sources of information for this publication are many and varied, official and unofficial. Particularly valuable have been the following periodicals: Air International, Alle Hens, Aviation Week, Combat Craft, Flight, International Defense Review, Jane's Defence Weekly, Marine Rundschau, Maritime Defense, Navy International, Pacific Defense Reporter, Royal Navy News Ships Monthly, Ships of the World, Soldat und Technik, Surface Warfare, and Warship International. Our sister references Jane's Fighting Ships and Weyers Flottentaschenbuch, edited by John E. Moore and Gerhard

Albrecht, respectively, were frequently consulted, as well.

My boundless gratitude goes to my Naval Institute colleague, Carol Swartz, senior manuscript editor of the Naval Institute Press, who kept track of the 90-lb. manuscript and mountains of photos while rendering decypherable thousands of tiny entries written between the lines and down the sides of the manuscript pages. Carol graciously coped with dozens of notes with late changes and fielded innumerable telephoned addenda; she is the real "editor" of this work. Beverly S. Baum and Moira M. Megargee again brought the whole together through expert production, and the people at Progressive Typographers, Inc., of Emigsville, Pennsylvania, made the whole thing readable and, we hope, pleasing to the eye. And for all her expert, but tedious, work on the index, I thank Marge Whittington. The late Mary Veronica Amoss once again translated M. Labayle Coulat's introduction with speed and fidelity. Thomas F. Epley, director of the Naval Institute Press, and Lionel Leventhal of Arms and Armour Press kept me at this lengthy and complex project and had faith in the outcome. Finally, I cannot express enough my gratitude to my wife Anne-marie and my daughter, Alexandra, for their assistance, patience, and support through many months of evening and weekend labor.

Combat Fleets appears on a two-year cycle, but the work of the editors is never-ending. Any user who has information to update or correct a photograph to contribute for use in preparing the next 1988/89 edition is encouraged to contact the editors via the Naval Institute Press, Annapolis, Md. 21402. Dates and locations for all photographs are desirable, and all material used will be credited to the contributors. Your assistance in making Combat Fleets as accurate, thorough, and timely as possible is, once again,

urgently solicited.

A. D. Baker III 1-1-86

PREFACE TO THE FRENCH EDITION

This 1986 edition of *Flottes de Combat* is the last to appear under my name alone. I have reached an age where I want to prepare a successor. Hence, I have asked my friend, Reserve Sr. Lieutenant Bernard Prézelin, who has been helping me correct the proofs of this work, to collaborate on the 1988 edition, which we will sign together. It will be time to entrust him solely or to his directed team with this nearly century-old document. Monsieur Prézelin is completely competent to be my successor: he has youthful enthusiasm, love of the navy, a tireless scholarship, the genius for details, and the critical spirit

needed for creating a document of this importance.

Since Admiral de Joybert, then CNO, asked me in 1974 to replace the late lamented Henri le Masson, I have strived to improve the work in each edition, and I have had the satisfaction of seeing it adopted by the Americans. The American edition, entitled Combat Fleets of the World, is published under the auspices of the U.S. Naval Institute in Annapolis. Translated, adapted, and completed by Mr. A. D. Baker III and the Naval Institute staff, it appears a few months after the French work, and I have had the pleasure of noting that the two editions have in turn benefited from reciprocal data, and that a good harmony has always reigned between the responsible Americans and myself. I hope this will hold true with my successor. As in each new edition, there are noteworthy improvements: notably, enhancement from over 700 photos and data, plus new diagrams by M. L. Gassier for Soviet ships, and by M. Robert Dumas for units of the other navies.

As with the preceding editions, the present one owes an enormous debt to all those who furnished data and photos.

My gratitude goes especially to:

 the officers of the Naval Etat-Major in Paris, who always gave us friendly advice and assistance;

- the captain and personnel of the Armed Forces Public Relations service (Naval Section):

—my friend, Capitaine de Vaisseau Croullebois, director of the excellent periodical Cols Bleu (Blue Jacket), whose assignment regrettably ends next January;

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defense Attachés and naval attachés accredited in Paris;

— the various foreign admiralties that consented to answer my questions, as well as the Soavaernets Taktikskole of Copenhagen.

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and M. Giorgio Giorgerini of the Italian Almanacco Navale.

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As usual, I received a flood of information and photos from the following persons, to whom my warmest thanks go for the indebtedness of *Flottes de Combat:* Messrs. Carlo Martinelli, Giorgio Arra, Gerhard Koop, Hannsjörg Kowark, Norman Polmar, author of the recent and remarkable 13th edition of the famous "The Ships and Aircraft of the U.S. Fleet," and also Messrs. Maurice Voss, Peter Voss, Pradignac and Léo, J. Taibo, Stephan Terzibaschitsch, and Wilhelm Donko.

I also thank M. Kohji Ishiwata, director of the periodical Ships of the World, who gave

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J.LC. 15-09-85

THE FOUR MAJOR NAVIES

"In the year 2000, the space above the oceans will be very much in use. It has nothing to do with its own importance: the sea will remain indispensable for transportation, for the launching of military power, and as the impregnable hiding place for ballistic-missile submarines."

Admiral Yves Leenherdt
 Chief of the Naval General Staff
 Défense Nationale, August 1985

There are two events that will affect naval strategy and tactics to some degree: the generalized use of outer space by surveillance and telecommunications satellites, and the so-called cruise missile.

A surveillance satellite might be geographically stationary, but most of them are not. There are two types of such satellites: one is optical and the other works by radar. The former travels at a high speed, around 25,000 km an hour, and being something like a telescope, it allows what is happening on earth to be observed; but it has a narrow field of vision (only about 60 km). An hour and a half later after the first pass, it passes again some 1,500 km from the area that it previously flew over. If, on its first passage, it saw a ship or naval force, the chances are that the second time it passes it will see nothing, because the ship or naval force will have moved on, leaving no trace upon the sea. Furthermore, to see anything, it must have good visibility, and that is relatively rare, because more than 70 percent of the time maritime skies are filled with clouds.

The radar surveillance satellite, which is not affected by clouds, may be of greater interest. Passing over at an altitude of 250 to 850 km, its field of observation is broader than that of the optical satellite. Therefore, it can be useful in observing any maritime area that is considered essential. It is very expensive, however, because it requires a miniature and dependable nuclear reactor to provide the power to make the radar work. In this area, the Soviets seem to be somewhat in advance of the Americans. They are already doing tests, which became known when one of their satellites came down in the far north of Canada some years ago. At the time of the Falklands War, it is thought that they launched a radar satellite to survey the zone of operations, but perhaps owing to the reactor's malfunction or for some other reason, the system did not work. It is likely that future research will be directed towards perfecting radar surveillance satellites. But when the number of satellites that would be required to observe the seas and oceans, which occupy seven tenths of the surface of earth, is considered, their use will undoubtedly be limited.

The surveillance satellite, whether optical or radar, cannot now be any more than marginally useful in the conduct of naval operations, and probably won't be for a long time. On the other hand, it can be very useful in observing what is taking place on land. It can photograph a specific objective, record a concentration of troops or vehicles, and count the number of ships at a naval base that appear available or unavailable. It can see that treaties concerning strategic armaments are being respected (the SALT agreements), follow naval construction in a dockyard, watch the progress being made, and determine its characteristics (a case in point being the Soviet aircraft carriers in the yard at Nikolayev). And it can pinpoint transmitting installations, radar, and missile silos, etc., of the adversary. Very soon, the French civilian satellite SPOT will be making pictures of the land and will, as has recently been said, have a naval "interest."

The conflict in the Falklands War brought into public view military interest in telecommunications relay satellites. They had been around for some time, but it was their military application in that conflict that made clear all the advantages that were to be gained by a navy that could afford them for its operational missions. The only operational British telecommunications satellite, Skynet, which was unstable in orbit, did not cover the area of the Falklands, and to compensate for that handicap the Royal Navy, at its headquarters in Northwood, did not have the means of transmission needed to control and command a combined fleet sent so far away. It is thanks to the use of American satellites, the civilian MARISAT and the military FleetSatCom and DSCS, that the British were able to keep in touch with their forces more than 11,000 km from home by encrypted communications. Thus Admiral Woodward, the commander of the forces on the spot, was able at all times to keep informed about the progress of diplomatic negotiations, receive all the military information that he needed for the success of his mission, and make known his own needs. Without the help of the American satellites, the British government and high command would certainly have faced much more difficulty in the management of that crisis. Until now, the commander of a naval force operating far from home, who was inadequately or not at all in touch by radio with his superior authorities, could not possibly keep informed about the general situation.1 Thanks to the telecommunications satellite, he can now, wherever he might be and in complete security, be in almost instantaneous contact with the authorities on land and can benefit from all the information that they have been able to procure by other means. It is now possible, while remaining on the spot, if the political-strategic context so permits, to see his operational responsibility more clearly. The telecommunications relay satellite has therefore become of vital interest, especially in the handling of those crises that, due to the present world situation, threaten at any moment. The Americans understand the situation so well that, with Milstar, they are bringing into being an

¹ Information with regard to the general situation must not be confused with tactical information, the latter being in the hands of the naval force: ships, airplanes, helicopters, etc.

interforces system of telecommunications with higher performance, more dependability, and more security than its predecessors.

The best indication of the importance that the U.S. Navy attaches to the use of space in all its forms is the recent creation of the Naval Space Warfare Systems Command. This organization, headed by a rear admiral, will deal primarily with everything that concerns space technology, while an operational command, the Naval Space Command, also headed by a rear admiral, is responsible for supplying the forces at sea with information. As everyone knows, the USSR is also extremely interested in space, and, as stated above, has taken the lead in the area of radar observation satellites.2 England, with its Skynet-IV and associated SCOT-1A, will also improve its long-distance transmissions. The French Navy, in turn, has entered the era of spatial communications by putting Telecom satellites and the interforces Syracuse into orbit. This system, which will be completely operational in 1986, will consist of three stationary stations, nine heavy mobile stations, three light stations, and eleven naval stations to be installed in major warships. The use of mobile stations, which are more difficult to track than stationary ones, guarantees the security of the system in a sudden attack. Unfortunately, the Syracuse system covers only one part of the terrestrial globe and cannot communicate with submarines. It must, therefore, be perfected, and other satellites must be launched to extend its areas of coverage. In a few years, the use of higher frequencies will increase the capacity of these new satellites.

Satellites, for observation and, especially, for telecommunications, have a tremendous future, but because of their expense, only the great powers, or an association of such, will

be in a financial position to bring such programs into being.

Finally, it must be remembered that satellites with a low orbit, such as those for optical surveillance and with radar, even though militarily valuable, are no less vulnerable by reason of lack of structural strength than they are unchangeable in their trajectory. This is certainly the explanation for the efforts being made by the Russians and Americans to solve this problem and then to develop systems that could destroy these satellites or make them harmless. For this reason, the classic means of observation for navies—embarked aircraft patrols—must not be abandoned but continued. As of now, the geographically stationary orbit telecommunications satellite is not very vulnerable, but one day it may be. For very long distance transmissions, it is necessary to continually improve HF communications, making them ever more responsive, dependable, and secure, and to develop, as the Americans are doing, mobile LF and VLF systems that can be reconstituted after aggression.

The cruise missile is a subsonic, long-range weapon that has the characteristic of being able to change its course over the whole length of its trajectory at a very low altitude. This should not be confused with aerodynamic missiles, which have been in service in the Soviet Navy for a long time and have a flight profile of the type low-high-

low.

The Americans were the first to study and perfect a weapon of the cruise missile type, the Tomahawk. Considering the number of missiles the U.S. Navy is expected to acquire (nearly 4,000 for the navy alone) and their price, it is obvious that the Americans attach great importance to this system and believe in its effectiveness. There are several versions of the Tomahawk, the three main ones being the TLAM-N, the TLAM-C, and the TASM-C.*

The first two are for attacks on land targets. Thanks to a special device, the missiles fly over water at an average height of 100 m, following the profile of the earth. Tomahawk can be detected when in flight above the sea, but because of its low altitude, it is almost undetectable during passage over land. The TLAM-N can carry its military nuclear charge up to 2,500 km; the TLAM-C has a conventional military charge of about 500 kg, and its range is about 1,250 km. With their SS-N-21, the Soviets have a system analogous to the TLAM-N.

The TASM-C is an antiship missile whose maximum practical range is in the neighborhood of 460 km. It carries a conventional military charge. The Soviet Navy does not

yet have this capability in its SS-N-21.

As of now, the various versions of the Tomahawk can be fired from armored watertight containers on surface ships and from the torpedo tubes of nuclear-attack submarines. Ultimately, they will also be fired from vertical launchers installed in surface ships and nuclear attack submarines.

If the use of the cruise missile against a fixed target on land has been resolved, its use against moving naval targets more than 400 km distant is more difficult. As is the case with any weapon fired beyond the horizon, it is necessary first to designate and identify the objective. This can be done by a forward observer, a submarine, an aircraft, or a surveillance satellite. The target's location must be continuously maintained because the target has moved during the flight of the missile, which is relatively slow. When the missile arrives within range, its automatic target detector goes into action and leads it to a target, but this must be the one originally aimed at, and the missile must not be misled by enemy countermeasures; everything, therefore, depends on the automatic homing system's ability to discriminate between various targets and on its effectiveness in resisting countermeasures. This type of missile is visible during its passage above the water, especially if a far-away warning plane as efficient as the American E-2C Hawkeye is embarked, and it can be lured away, as has just been said, or destroyed during its final approach. Finally, its most serious deficiency is that, once fired, it cannot be brought back on board, as can an assault plane, to start the attack anew; it is, then, essential that it arrives at its target, otherwise its launching is of no use. Fired from land, the cruise missile can prevent entry to certain areas (narrow seas, straits, etc.) by any ships or surface formations, but it can not prevent a submarine, carrying missiles of this type, from getting in and launching missiles such as the American TLAM-N or TLAM-C or

the Soviet SS-N-21 against land targets. The antiship cruise missile, operating *alone* or in small numbers, is not that final weapon that some people, here or there, have said or written.

Used en masse, the antiship cruise missile could be formidable, because it has the potential to saturate the defense. The same is true of the Soviet long-range aerodynamic missiles launched by surface ships and submarines (SS-N-12, SS-N-19) or by bombers with a long range of action (AS-4, AS-6). Faced with a saturating threat of this order, most western ships would probably be sunk. Many of them have only short-range surface-to-air systems mounted in six or eight launchers whose non-automatic reloading takes time. So much labor is involved that these systems can launch, only in the best of instances, six or eight missiles, after which, while they are being reloaded, the ship is hopelessly vulnerable to the arrival of new assailants.3 This is why, before the saturating threat of the cruise missile and antiship missiles in general was realized it was considered sufficient to make up for this handicap by adding more surface-to-air missiles, doubling, for example, the number of mounts (as in the case of the British Type-22 frigates) or by completing the defense of these ships with artillery systems and with electronic countermeasures. The Soviets, aware of the Tomahawk threat, soon understood that they must increase the number of short-range missiles on board their most valuable ships. To avoid the complexity of automatic-reloading systems, they were the first to deploy vertical-launching missiles; for example, there are facilities for adding 96 such missiles of the SA-N-9 type to the aircraft carrier Novorossiysk and 128 to the nuclear cruiser Frunze, although neither ship yet has an operational system.

Indeed, the SA-N-9 system probably is not capable of intercepting missiles flying close to the ground, but such cruise missiles will not be a reality tomorrow. The U.S. Navy is somewhat behind in imitating the Soviets: all of its future combat ships and many of the destroyers slated for refits will have vertical launchers. The British also have adopted a 32-missile, vertical-launch version of Sea Wolf for their future Type-23 frigates. For the 1990s, the French Navy is developing a similar system, the SAAM, and its future nuclear aircraft carrier will carry launching silos for this new surface-to-air weapon, a short-range missile that will be capable of intercepting a cruise missile as well as other weapons traveling close to the surface. Obviously, these new armament systems must have mechanisms that allow them to fire on several targets at a time, and ships must have more and more efficient countermeasures of other types installed.

It should also be noted that there is again interest in small-caliber quick-firing artillery as the last chance against an antiship missile. The British have reinforced the defense of their ships with everything available. Having acquired some Goalkeepers from the Netherlands, they have also adopted the American Mk 15 CIWS, Vulcan/Phalanx and have gone so far as to have installed light machine guns along the hand-rails of some of their ships. The Americans are planning to upgrade the performance of the Mk 15 CIWS Phalanx, not only against missiles traveling just above the water but also against those weapons that make high-angle diving attacks.

After these observations on navies and space and the threat created by the cruise missile, this introduction will now turn to its objective, a description of the evolution of

the four largest navies.

U.S. NAVY

Since the 1984–85 edition of Combat Fleets was issued, 3 Ohio-class SSBNs, each one carrying 24 missiles, have joined the fleet: the Henry M. Jackson, Alabama, and Alaska. These three submarines, like their predecessors, the Ohio, Michigan, Florida, and Georgia, are based at Bangor, Washington, on the West Coast of the United States, whereas those of the Lafayette-class are deployed and based on the Atlantic at Charleston, South Carolina, and Holy Loch, Scotland. Six Ohios are under construction, ordered, or authorized, while five more, at the rate of one per year, are planned in the 1987–1991 program. On 25 January 1986, when the Alaska joined the service, the naval component of the American deterrence force totaled 37 SSBNs with 768 SLBMs* with multiple, independent warheads (MIRV):

The Soviet Navy faces these 37 American SSBNs with 77 strategic submarines (63 of them nuclear-powered), but it must be pointed out that only 24 of them have MIRV-type missiles. Details of these submarines can be found in the section on the Soviet Navy in this book

The SALT II agreement on the limitation of strategic arms places at 1,200, whether SLBM or ICBM, the total number of MIRV vectors that each of these two nations is authorized to possess. If, to the 768 SLBMs cited above, are added the 550 Minuteman III (3 MIRV), it appears that the Americans are on the high side of the number authorized. On the Soviet side, the smaller number of this type of SLBM is compensated by their greater number of missiles with a single warhead and of multiple-warhead ICBMs (SS-17, -18, and -19). The SALT II agreement was signed in 1975 by President Ford, but has never been ratified by the American Senate. President Reagan, therefore, is not obliged to respect it. Nevertheless, to prove his goodwill, he has decided to respect the spirit rather than the letter of the agreement. That is why he ordered the disarming of the SSBN 635 Sam Rayburn (16 Poseidons) before the seventh Ohio (tne Alaska) went into service, and her sisters Andrew Jackson (SSBN 619) and Nathan Hale (SSBN 623) will be deactivated in April 1986 to compensate for the commencement of sea trials by the Nevada (SSBN 733). It is probable that, unless a new agreement is signed, he or his successor will do the same thing every time a new Ohio joins the fleet, and will play the same game with the number of ICBMs to be maintained in service.

² Particularly in ensuring the target location for aerodynamic missiles with great range (for example, the SS-N-12 and SS-N-19); this is possible only if a very complex, dependable, and precise system of transmissions in data is available.

^{*} TLAM-N = Tomahawk Land Missile Attack Nuclear TLAM-C = Tomahawk Land Missile Attack Conventional TASM-C = Tomahawk Anti-Ship Missile Conventional

³ The French Navy, with its Crotale EDIR, has a very effective system against low-flying missiles.

^{*} Sea-launched ballistic missiles.

The U.S. Navy has 97 nuclear attack submarines (SSN). In that category, the Los Angeles-class continues to hold high priority. At the time of this writing, 33 of the class are in service, and 19 more are in different stages of construction, are ordered or authorized. The program for 1987-1991 allows for 14 more. The Los Angeles class has begun being equipped with the Tomahawk in both its anti-land target and antiship versions. Beginning with SSN 721, the Chicago, this weapon will also be fired from underwater by twelve vertical launchers situated forward in the boat as well as from torpedo tubes, as it was in the earlier boats. Equipped with this missile, with the most elaborate version of the Mk-48 torpedo, and soon with the Submarine Standoff weapon that will replace the obsolescent Subroc, plus a very sophisticated, multifunctional sonar, the Los Angeles class probably has no equal in the world, even among the most recent Soviet achievements. One of its principal missions is to chase and destroy enemy SSNs and SSBNs. Nevertheless, research for accurate target discrimination is becoming more and more intensive. The need to be ever more quiet for protection against enemy antisubmarine weapons, and to put in operation state-of-the-art armament and equipment, will force the U.S. Navy, as it has the Soviets, along the route of big-tonnage SSNs. The submerged displacement of the Los Angeles class is less than 7,000 tons; that of future SSNs will exceed 9,000 tons. Research on these boats is well along, and the first unit will be in the 1989 budget and will lead the thirty or so replacing the Sturgeon-class SSNs, whose life, while awaiting the new submarines, will be, thanks to well-programmed alterations, prolonged to 30 years before they are condemned. As far as the future SSNs are concerned, it is reasonable to suppose that the building of the prototype, provisionally christened the SSN 21 (nuclear attack submarine of the twenty-first century) will take

Thorough study of the Falklands War demonstrated that the U.S. Navy was right in insisting that the building of big nuclear aircraft carriers should not be abandoned. In this opinion, the navy has received the firm support of the Secretary of Defense, the Secretary of the Navy, and of President Reagan, in opposition to the campaign against these ships that has arisen in some of the press and even in some high circles in defense.

There are fourteen aircraft carriers in service, four of them nuclear powered (the Enterprise and three of the Nimitz class). Two improved Nimitz-class carriers, the CVN 71 Theodore Roosevelt and CVN 72 Abraham Lincoln, are in the yard, while a third unit of this class, the CVN 73 George Washington, will have her keel laid in 1986. The Theodore Roosevelt, which has been afloat since 3 November 1984, is proceeding very rapidly and the ship is to be commissioned in October 1986, probably joining the fleet in the autumn of 1987.

Parallel with this new construction, the Service Life Extension Program (SLEP), which aims at prolonging the life of ships in service by some fifteen years, is going ahead on schedule. It has been completed in the conventional carriers Saratoga and Forrestal, is now proceeding in the Independence, and is programmed for the Kitty Hawk and the Constellation. The term aircraft carriers refers to ships with embarked aircraft. These planes should be just as, if not more, sophisticated as those to which they would be opposed in case of conflict, hence the priority accorded the all-weather F-14 Tomcat fighter and the F/A-18 Hornet fighter bomber. These planes are already in service in numerous squadrons, and the production of several hundred of them is proceeding to augment and replenish embarked aircraft.

The Falklands affair made it evident that these aircraft must have at their disposal a long-distance alert system to prepare them to meet in time any aerial or long-range missile threat, whether the latter be fired from a submarine, a surface ship, or from the land. With its E-2C Hawkeye, the U.S. Navy has an excellent plane that it will continue

to build in small numbers and to improve.

Among the other combat ships, the battleship *Iowa* was returned to service in the spring of 1984. She is based on the Atlantic, while the *New Jersey*, having completed a visit to the Mediterranean, has reached the Pacific. The alterations to the *Missouri*, although they did not appear in the 1985 budget, will be pursued thanks to some budgetary maneuvering; those of the *Wisconsin* are written into the 1986 budget. These four battleships are excellent platforms for the Tomahawk (32 weapons in each ship), are well protected, and their powerful gun armament can be very useful, although that was not totally proven in Lebanon, in a conflict that involved a secondary nation with a maritime border.

As to cruisers whose mission is antiair, the navy does not plan to build more than the 27 CG 47-class ships incorporating the Aegis system. This number of units seems adequate for escorting aircraft carriers and battleship battle groups, and furthermore their mission could be equally well fulfilled by the future Arleigh Burke class of big destroyers. Four cruisers with Aegis are now in service, the Ticonderoga (CG 47), the Yorktown (CG 48), the Vincennes (CG 49) and the Valley Forge (CG 50), and six others are on the ways, one of which, the Bunker Hill (CG 52) is the first American surface combat ship to have vertical launchers. Five more are on order. In comparison with the CG 47, these later cruisers will benefit from improvements in the program aimed at increasing their antisubmarine capacity (particularly the Sea Hawk helicopter and the very-low-frequency SQR-19 towed array sonar) and from the offensive weapon Tomahawk. With the Aegis system, they can simultaneously follow 256 targets and deal with 18 of them. The Arleigh Burke (DDG 51), the first of a series of very big destroyers, was ordered recently, and 17 more with a lighter version of the original Aegis are in the 1987-1991 program. The DDG 51 will also incorporate technical innovations, particularly in the areas of naval architecture and propulsion, and will, when all is said and done, be a mini-Ticonderoga. Considered by many too sophisticated and therefore very expensive, it is quite possible that the navy will be obliged to revise downward the number of these ships it wants to build, maybe to far less than the announced sixty.

The 31 Spruance-class destroyers, although of very recent construction (the last one went into service on 5 March 1983), will, in successive stages, be given alterations with a view toward improving their armament and antisubmarine equipment, their AA and anti-missile defense, and giving them more potential offensive with the Tomahawk. Seven of those to be modernized will be given two quadruple mounts for the Tomahawk, but the rest of them will have vertical launching pads, which will allow 29 cruise missiles to be embarked, almost as many as in an Iowa, or a mixture of that weapon and the

future, long-range antisubmarine weapon that is due to replace the present Asroc. These alterations will not present too many problems, because there is plenty of space in these ships — their designers and the Navy Department having had the wisdom at the time the project was defined to foresee alterations halfway through the ships' lives.

As to frigates, the FFG 7 program is going ahead. All that remains is to put in service the final five of the fifty-one units; except for one, they will join the fleet this year. For the moment at least, the U.S. Navy does not foresee the building of any more frigates, but the author would not be surprised to learn that when opposition to the cost of the DDG 51 arises, the navy has renewed its interest in a new type of intermediate ship between the DDG 51 and the FFG 7 that would be suitable for carrying out missions that do not need such responsive armament and equipment.

The minesweeper program is now in its completion phase, although it has experienced numerous frustrating delays. Later units of both the oceangoing Avenger class and the coastal Cardinal class will have a mine-hunting sonar designed by the French firm

Thomson-CSF.

The U.S. Navy is determined to modernize its amphibious fleet. It plans to build up to eleven large LHDs, retaining at the same time the efficient Tarawa-class amphibious assault ships, which were built several years ago, and the Austin-class transports. The LHDs will displace over 40,000 tons, full load, and will do 24 knots. Equipped with protection, sheltering three LCAC-type amphibious craft, and with a flight deck big enough to maneuver numerous helicopters and/or planes with short takeoffs and landings, such as the AV-8B Harrier, it will transport a large contingent of Marines, close to 2,000 men. The prototype of the class, the Wasp, is already building. On the other hand, the U.S. Navy will not build more Whidbey Island-class LSDs than the eight already ordered or authorized. In their place, it will build a new class of LSD based on the Whidbey Island, but with greater cargo capacity at the cost of a smaller docking well. The navy has also launched a big program of amphibious vehicles that operate on an air cushion, the LCAC, in effect, to modernize its LCU-type landing craft force. Finally, as it is doing for the aircraft carriers, it plans a SLEP program of modernizing all the Austin-class amphibious ships in service to prolong their existence.

The logistic support fleet, not only that of the U.S. Navy but also of the Military Sealift Command, will be modernized and strengthened. What is called the Afloat Prepositioning Force, which embarks on a permanent basis material and equipment for the U.S. Marines, is proceeding rapidly. To replace the variety of units that were bought for this purpose, it will soon comprise thirteen large ships, new or converted, which will be able to store in their holds the equipment, armament, and munitions necessary to maintain three Marine Amphibious Brigades of 15,500 men each for a long time. By the end of 1985, the eight 55,355-ton container ships with a speed of 33 knots, which the U.S. Navy bought from Sea Land and modified to service the Rapid Deployment Force, were all operational. Based at American ports, half on the East Coast and half on the West Coast, they will be prepared to get underway with a minimum of delay.

Priority in the areas of arms and equipment for the U.S. Navy will continue to be:

Telecommunications and space armament

 The strategic missile Trident-2 (D5) which is scheduled to replace Trident-1 in the Ohio-class SSBNs

-The Tomahawk

- Passive underwater detection, particularly toward sonar with very low frequency, an area where the Soviets may be catching up with the Americans
- Systematic research aimed at reducing noise created by submarines and surface ships
- An antisubmarine weapon with great range and change of environment to replace Subroc in nuclear attack submarines
- —An antisubmarine rocket to succeed Asroc on surface ships. The search for a weapon common to these ships and to SSNs has been abandoned as too complicated
- Improvement in the performances of antisubmarine torpedoes (MK-48 ADCAP, MK-50, etc.)

— The Aegis system

- Aerial defense and anti-missile systems;
- Better protection against smoke, toxic gas, etc., a lesson learned in the Falklands War
- Greater protection of ships against light projectiles and the shock effect of a nuclear explosion
- In new or converted ships, the replacement, if possible, of superstructures made of aluminum, which is too fragile and too vulnerable, with steel superstructures, etc.

Finally, the U.S. Navy will continue to allot prime importance to all forms of electronic warfare, particularly for countering the saturating threat of the cruise missile, for it is obvious that the Soviet Navy is making a tremendous effort to catch up with the American Navy in that area.

This brief summary on the U.S. Navy and its evolution shows clearly that America must always retain its maritime superiority over the USSR, a proof sine qua non, according to one of the most recent chiefs of naval operations, Admiral Hayward, of a judicious and efficacious strategy.

SOVIET NAVY

The Soviet Navy never ceases to strengthen itself, more in quality than in numbers. After difficulties at the onset, the building of the enormous Typhoon-class SSBNs seems now to have achieved its rhythm, with one of them going into service every year. Four of these submarines have now been completed. Although it was expected following the completion of the Delta-III program, it was surprising to learn from U.S. sources that

⁴ With the LCAC, it is possible to launch waves of assault troops beyond the range of hostile coastal radars and to create, thanks to their speed of 42 knots, the effect of surprise.

the fifteenth boat of the series, now referred to as Delta-IV, was a different version and would be equipped with a new type of strategic missile, the SS-N-23, which, in still another surprise, employs liquid fuel propulsion, where it was thought that after the SS-N-20 went into service in the Typhoons, the Soviet Navy had decided to adopt solid fuel for the propulsion of its ballistic missiles. This three-stage SS-N-23 is probably no more than an improvement of the two-stage SS-N-18, giving the Delta-IV greater range and, more important, a number of miniaturized MIRV heads. It is said that eventually the SS-N-23 will replace the SS-N-18 in the Delta-III submarines, which makes it appear that its dimensions are probably identical with the latter, that its installation in SSBNs was foreseen a long time ago, and, therefore, when it was being built, it was adapted to the launching tubes. If that is not the case, installation of the SS-N-23 could require extensive alterations to the Delta-IIIs and put them out of commission for a long time. Whatever the case, the Americans estimate that this Delta-IV, at least four of which will be built, is intended to break through the arctic icecap and come to the surface to fire its weapons.

In order to meet the demands of the agreements on strategic arms, the Soviets are continuing to disarm their Yankee-class SSBNs, at least as strategic submarines: fewer than 22 of them remain in service. The rest have been or will be converted to nuclear attack submarines (SSN or SSGN).

In short, the naval component of the Soviet deterrent force today is composed of 63 submarines with a total of 948 ballistic missiles:

4 Typhoon × 20 SS-N-20 missiles = 80 ballistic missiles (MIRV)

1 Delta-IV × 16 SS-N-23 missiles = 16 ballistic missiles (MIRV)

14 Delta-III × 16 SS-N-18 missiles = 224 ballistic missiles (MIRV)

4 Delta-II × 16 SS-N-8 missiles = 64 ballistic missiles 18 Delta-I × 12 SS-N-8 missiles = 216 ballistic missiles

1 Yankee-II × 12 SS-N-17 missiles = 12 ballistic missiles

21 Yankee × 16 SS-N-6 missiles = 336 ballistic missiles

The Soviet Navy has 125 nuclear attack submarines, 49 of them equipped with aerodynamic missiles. In this category, the building of Oscar-class SSGNs (14,500 tons submerged) is still underway: two are in service, a third is undergoing trials, and others are under construction. They carry 24 long-range SS-N-19 missiles. Since the last edition of this book, three types of big nuclear-powered attack submarines have joined the fleet: the Mike, the Sierra, and the Akula. The Mike, which displaces 9,700 tons submerged, has a titanium hull and two high-powered reactors, doubtless operated by liquid metal instead of pressurized water. They are considered the successors to the fast Alfa, whose construction was discontinued after the first seven (one since dismantled), doubtless because they are too small and do not carry enough armament. The Sierra also has a titanium hull and an advanced type of water-pressurized reactor. It displaces 7,550 tons submerged and is believed to be the successor to the Victor-I-class SSN, which went into service between 1968 and 1975. About twenty of these will probably be built.

The Akula, built in the yard at Komsomolsk on the Amur River in the Far East, is very much like the Sierra, but what its exact role is is not clear. Whatever the case, these new submarines have 650-mm and 533-mm torpedo tubes, a direction-changing antisubmarine weapon, and, certainly, as far as the Mike, Sierra, and Victor-III — perhaps also the Akula — carry nuclear SS-N-21 cruise missiles, whose mission is to attack land targets, like the American Tomahawk. All these SSNs, as well as the 18 Victor-IIIs, have up-to-date sonars, including very low frequencies towed passive arrays. The reactors and the main propulsion systems of these boats are now dependable, which was not the case with the first generation of SSNs, and the ruggedness of these submarines has been demonstrated when they were frequently in trouble in recent years. Their large volume of surrounding ballast tankage constitutes an effective protection and is a valuable safeguard against sinking in case of collision.

Building of the Kilo-class conventional attack submarines is being maintained at the rate of 4 or 5 a year, at least some of which are for export.

From the above, it can be concluded that, on the material level, the Soviet submarine force continues to improve. Soviet submarines also are very enterprising, and have no hesitation in approaching a merchant ship or warship, and leaving the scene, as happened on 21 March 1984, when an incident, such as a collision, might occur.

In other categories of significant warships, few units have joined the fleet since the 1984 edition of this book: the nuclear cruiser Frunze, three large Udaloy-class destroyers, two more Sovremennyys, and two Krivak-class frigates, which are equipped with a helicopter and have been transferred to the KGB's fleet. The Frunze, compared with her sister ship, the Kirov, has many improvements, particularly in antiair and antimissile defense.

The rather slow rate of building destroyers is not surprising, because they are large and complex ships with a wide range of armament and equipment:

Under construction or fitting out there are:

A 65,000-ton nuclear-powered aircraft carrier

- The VTOL carrier Baku (originally thought to be named Kharkov)

A third Kirov-class guided-missile cruiser

- Two Slava-class missile cruisers

Three or four Udaloy- and Souremennyy-class destroyers, and at least one Krivak-III-class helicopter frigate

The nuclear aircraft carrier ordered from the Nosenko Yard in Nikolayev is proceeding so fast that her sea trials scheduled for 1989 might be advanced by a year. It is too soon to know whether this is an aircraft carrier with catapults and arresting gear or a ship for short take-off-and-landing aircraft. Whichever is the case, when the ship joins the fleet, it will not mean any more than that the Soviet Navy has embarked aviation worthy of that name. Having no experience in this area, there is no reason why it should devote less time than do Western navies to adopt a satisfactory doctrine for the use of aircraft carriers and of embarked aviation.

The sortie into the Black Sea of the Baku, fourth and last of the VTOL carriers, which has been expected for a long time, was delayed because of significant changes to her armament and equipment by comparison with her predecessors.

When the nuclear aircraft carrier goes into service, the Soviet Navy, along with its two

or three Kirovs, will be able to take pride in having a nuclear-propulsion task group. It would be logical for this formation to be attached to the Pacific Fleet, as much to increase its offensive ability against land in the event of a confrontation with China and, if that should be the case, for long deployment in the Indian Ocean. The presence of this task force in the Pacific, which may be the precursor of others, is not yet any more than a far-off prospect, but it could encourage the U.S. Navy to downgrade its Atlantic Fleet in favor of its Pacific Fleet. If that should be the case, it would reduce the pressure that the former exerts on the Soviet Arctic Fleet, whose main mission seems always to be defensive, as was shown by the big air/naval maneuvers that took place in the North Atlantic in July 1985.

In matters of weapons and equipment, the Soviet Navy continues to make progress. As has already been said, its most recent submarines now have modern, multi-function sonars, including towed, very low frequency antennas. A new 650-mm wake-homing torpedo is now in service; it has a conventional military or nuclear charge and its range is around 100 km. The SS-N-16, which is the newest antisubmarine weapon that can be used in any environment (sea-air-land), is probably also launched via the 650-mm

New search and weapon-guidance radars, doubtless more efficient and sophisticated than their predecessors, have been seen on board the newest ships, including phasedarray prototypes, prefiguring those that are to be installed in future ships. More than ever before, the Soviets are interested in electronic warfare: their big modern surface ships are now loaded with passive EW equipment, more and more efficient chafflaunching systems, and IR alert systems.

In connection with strategic missiles, it was noted above that the SS-N-23 continues the Soviet use of liquid-fueled rocket propulsion for submarine-launched ballistic missiles, when it had been thought that the Soviets would abandon that means of propulsion, which Western navies have always refused to adopt because of its intrinsic vulnerability. A new, short-range surface-to-air missile, the SA-N-9, more sophisticated than the SA-N-4, which has been in service for nearly two decades, is almost operational: so far as can be discovered, it does not seem that this new system would be able to intercept a low-flying missile like the Exocet. Like the SA-N-6 surface-to-air missiles that are carried by the Kirov- and Slava-class cruisers, the SA-N-9 is launched vertically.

Recently, the foreign technical press has written of a Soviet organization called Spetsnaz. A branch of the GRU (the Soviet military intelligence service), Spetsnaz consists of small groups of commandos, from six to ten men, who are highly trained not only to carry out attacks on important enemy military installations (for example, radio stations, munition depots, combustible storage, oil pipelines), but also to pinpoint and physically eliminate responsible enemy politicians and high military authorities. Spetsnaz has four naval brigades, probably one for each fleet, each one consisting of a general staff, a section especially chosen to deal with enemy naval authorities, a possible fleet of midget submarines, three underwater demolition battalions, a battalion of parachutists, a communications company, and several units for logistic support. In time of war, the first priority of the naval commandos of Spetsnaz will be at SSBN and SSN bases, as well as in communications and command installations. This kind of activity, which can be compared with terrorism, like the increasing below-nuclear threats that are now being made by countries friendly to the USSR, should restore a certain reality to the use of clandestine support and command organizations.

During the past two years, a slow but continual growth has been observed in the Pacific Fleet, which now includes two Kiev-class VTOL carriers, the Minsk and the Novorossiysk. The Black Sea fleet continues to provide the surface-ship squadron that the Soviets deploy in the Mediterranean, while Mediterranean-deployed submarines come primarily from the Northern Fleet. This squadron, called the Sovmedron by NATO, with its surface ships, submarines, and the support of long-range aviation based on the shores of the Black Sea, presents a decided threat in the Mediterranean. However, the importance of this Sovmedron should not be exaggerated. In general—and from a permanent point of view — it consists only of a relatively light surface force; five or six destroyers or cruisers, frigates, or corvettes and the usual intelligence collectors (AGI). The most formidable part of the force, and the most to be feared, are the five or six conventional and nuclear submarines from the Northern Fleet that remain on fairly long deployment in this theater. Making very few calls in friendly ports, these submarines, as much to rest their crews as to keep their maintenance up-to-date, spend most of their time alongside a supply or repair ship in one of the anchorages that the Sovmedron frequents.

It must also not be forgotten that this squadron is completely "homeless" in the Mediterranean, because it does not have a single naval base of its own. That is not to say that it has no facilities here and there that it can make use of, notably at Tivat in Yugoslavia for its submarines, which somewhat compensates for this handicap. Its activities are, in general, on a small scale. Once or twice a year, for example when a new ship comes out of a yard on the Black Sea or when the Soviet Navy is engaging in a large-scale exercise, the navy is reinforced by several large ships such as VTOL carriers and missile cruisers, but their stay in the Mediterranean does not last long.

Indeed, it appears that the Sovmedron has two main missions:

To hamper the freedom of action of Western fleets, particularly that of the U.S. Sixth Fleet, but also that of the French Squadron, which, with its two aircraft carriers Clemenceau and Foch, is the most powerful surface force in the theater, after that of the United States.

To support by its presence the states with which the Soviet Union has friendly relations, and also to support discreetly the movements of terrorists or others whose objective is to upset established order and hinder the interests of the West. But it has to be careful not to allow an ill-thought-out, badly prepared, or inopportune action to unleash stronger reactions than foreseen.

In October 1977, the use of the U.S. Sixth Fleet and the Soviet squadron (Eskadra) as tools in the management of the Yom Kippur crisis, was a determining factor in the outcome of that crisis. Because of a mutual respect between the ships of both nations, no incident occurred, but several actions, whose objective was to improve the outcome in the interests of the powers concerned, did: the delivery to Israel of aircraft, by way of the

American aircraft carriers, and the transfer of Soviet material to the Arab States with the aid of the squadron's amphibious ships. Throughout the affair, the naval forces showed their ability to manage a crisis, but the warning was clear, and at any moment a very serious Soviet-American incident could have produced extreme consequences. Therefore, it is probably to control more directly another possible crisis than to produce eventual military actions that the Soviet Mediterranean Eskhadra, until that time a quasi-independent force, was put under the orders of the Soviet officer commanding the Southwest theater.

Paradoxical as it may seem to the reader, the author is of the opinion that the presence of a Soviet naval force, at least at its present level, contributes to the maintenance of a degree of equilibrium in this high-risk area. In this small theatre of operations, which could tomorrow become a real trap for surface forces threatened by long-range aircraft and their missiles, SSNs, and other SSGNs—and tomorrow perhaps by cruise missiles based around its shores—it would seem that the simultaneous departure of big-ship forces, Soviet as well as American, could be the precursor of great danger. Also, it is not unreasonable to think that as long as the 6th Fleet and the Soviet Mediterranean squadron stay there, a crisis in the Mediterranean, no matter how serious, could eventually be overcome.

ROYAL NAVY

The Chevaline modernization program of the four Resolution-class ballistic-missile submarines will be completed this year (1986) when the Repulse re-enters service. This very important program has replaced the three Polaris nuclear-warhead re-entry vehicles with six warheads, each with more maneuverability and a greater ability to penetrate. These missiles have been re-engineered, and advantage was taken of this conversion to improve the navigation and tactical armament of their launching submarines. It is worth remembering that the Resolution class is the only potential dissuasion force of the United Kingdom, which has put them at the disposal of NATO, the British government having at all times the right to withdraw them if, in its opinion, the greater interest of the country requires it. The Chevaline conversion of the Resolutions will permit their existence and credibility to be prolonged until the four ballistic-missile submarines armed with the American Trident-II, which are scheduled to replace them, begin to enter service in the mid-1990s. In spite of its past and present critics, some of them even in the Conservative Party, the Trident program now seems to be sailing before the wind, but, because of its mounting cost, it has been decided to spread it out over 20 years instead of the 15 originally foreseen. The prototype of the PWR-2 reactor that is to be installed in these SSBNs, and also in new SSNs, is under construction and is expected to be in operation in 1987 or 1988. By comparison with the reactors now in service, the PWR-2 will have a power output and length of life 50 percent higher. The first SSBN of this generation might be laid down next year in the Vickers shipyards.

As of now, the Royal Navy has 14 SSNs, three of them of the new Trafalgar class; a fourth unit of the class will commission during 1986. The principal mission of these submarines is identical to that of their American counterparts: to hunt and destroy Soviet SSBNs and SSNs and to sink big surface ships. The Trafalgar-class boats are considered quieter than their predecessors of the Swiftsure and Valiant classes.

The Upholder, first of a series of eight to ten conventional torpedo attack submarines with very high performance, has been ordered, but although it was anticipated that one would go into construction every year, the 1985–1986 White Paper on defense made no mention of future orders. In connection with these boats, it is worth mentioning that they are to be equipped with an active-passive sonar derived from Thomson-CSF's Eledone.

The Ark Royal, third and last of the Invincible-class V/STOL aircraft carriers, went into service in November 1985, but will not be truly operational until this year. With the three Invincibles, the Royal Navy will have two active carriers with the third in reserve or undergoing repair. The Invincible will be the first to undergo repair, particularly to correct her propulsion machinery, which vibrates when she is making more than 21 knots.

The Royal Navy has 52 destroyers and frigates. Eight big Type 22 (Batch 2 and Batch 3) frigates are in the yards or on order, and the prototype Type 23-class frigate is also on order. It is envisaged that at least eight ships of this latter class will be built. The Type 23 has an original propulsion system consisting of four diesel generator sets driving two electric motors for silent operation in antisubmarine operations, and also two gas turbines for higher speeds. The Type 23 will deploy the forthcoming Anglo-Italian EH-101 helicopter. Counting the new ships and those that will be taken out of service, it can be estimated that by the latter half of the next decade, the Royal Navy will have 46 relatively modern antiair and antisubmarine ships (6 Amazons, 14 Sheffields, 14 Type 22, and 12 Type 23).

Modernization of the Royal Navy's minehunter force is progressing according to plan. There is not much to be said about this program except that its single-role minehunter will have a sonar and a system of minehunting that seems to be less up-to-date than those of the so-called "Tripartite" ships designed together by Belgium, France, and the Netherlands.

In the area of fleet logistic support, the Royal Navy will replace its Royal Fleet Auxiliary Tidespring and Olna classes of fleet oilers, which are now more than 20 years old, with big replenishment ships (fuel, food, spare parts, ammunition), six of which are expected to be built. The ships will have a landing deck and a hangar with space for several helicopters. In this connection, it should be noted that with the Hermes out of service and the amphibious assault ship Fearless in reserve, the Royal Navy now has very few ships that can launch assault helicopters with a minimum of delay: the amphibious landing ship Intrepid with two Sea Kings and the auxiliary helicopter support ship Reliant with five of the same type of helicopter. To make up for this handicap, the Royal

Navy is counting on the conversion of the civilian container ship Contender Bezant into the auxiliary helicopter carrier Argus.

To the great regret of the British armament industry, the Royal Navy has adopted the American Harpoon missile and the Mk 15 CIWS (Vulcan/Phalanx) point-defense gun system. The Type 22 Batch-3 and the Type 23 frigates will carry the Harpoon. The explanation for this choice is that the Royal Navy's attack submarines already carry the Sub-Harpoon. The Mk 15 CIWS was chosen because there is no analogous British system.

A new heavy torpedo, the Spearfish, is being developed for submarines. It is intended to replace the Mk 24 Tigerfish. The light antisubmarine Stingray is now operational, beginning to succeed the American Mk 46.

The Royal Navy has made some headway in making up for its slowness of the last few years in submarine detection. It now has the Type 2016 and its successor, the Type 2050 low-frequency sonar; and very low frequency, passive, towed linear array sonars, some of them for surface ships and some for submarines, are serving with the fleet.

To conclude this review of the Royal Navy and its evolution, something must be said about the Fleet Air Arm. Recently ordered were 9 Sea Harriers which, together with those in service or on order, will bring the number of these aircraft ordered to 53. The new units are intended to have Blue Vixen radar to replace the Blue Fox, which demonstrated some deficiencies in operation. For air defense, they will use four American air-to-air AMRAAM missiles and two Sidewinders; for assault, two air-to-sea British Sea Eagles will be carried.

To compensate for the lack of an embarked long-distance early-warning plane, whose lack was very much felt in the Falklands, the Royal Navy has installed in eight Sea King helicopters the Searchwater radar, with which the Nimrods of the RAF are equipped. In spite of its known performance, this radar is a makeshift solution for the inability to embark in the VTOL carriers of the *Invincible* class a true early-warning plane, such as the U.S. Navy's E-2C Hawkeye. Modernization of the 34 Nimrod planes belonging to the Maritime Group of the RFA (Royal Fleet Auxiliary) has been completed; it consists of an in-flight replenishing system, Sidewinder missiles for self-defense, and improved axionics.

FRENCH NAVY

There are two significant dates for the French Navy to remember: 4 August 1984, when, with the entry into orbit of the TELECOM 1A, it entered the era of space communication, and 25 May 1985 when L'Inflexible, its first ballistic-missile submarine equipped with a multi-warhead strategic missile, left base at Isle Longue on its first operational patrol. But this is only a stage, because Le Tonnant and Le Foudroyant at Cherbourg and L'Indomitable and Le Terrible at Brest will be converted on the model of L'Invincible and will be back-fitted to carry an improved M4 missile, with which it will be possible to reach objectives more than 5,000 km away.

When conversions are completed around 1992, the French Navy will have available 80 M4 or modernized M4 SLBMs, with a total of 480 individual warheads. Its ability to respond to a nuclear aggression will be three times stronger than it is today, and the first new-generation ballistic-missile submarine will probably go into service in 1994. The keel of this 15,000-ton boat, whose plans are well along, will be laid in 1988 at Cherbourg in a new yard specially designed for the building of SSBNs and SSNs. Clearly, the characteristics of this SSBN (depth, quietness, equipment, etc.) will be better than those of L'Inflexible and of other submarines of the first generation.

The nuclear attack submarine Saphir went into service on 6 July 1984, and the third boat of this class, the Casabianca, is on her sea trials. The authorization to lay down the first nuclear aircraft carrier should be signed in 1986. The aircraft carrier Clemenceau went to be refitted in September 1985 at Toulon: she will have her antiair and antimissile defense strengthened (Crotale EDIR surface-to-air missiles and Sagaie countermeasures for both medium and long range). A year later the Foch will commence the same modernization.

The Jean de Vienne, a Type C-70 antisubmarine guided-missile destroyer, joined the Mediterranean squadron in the spring of 1984, the Primauguet is on trials, and La Motte-Piquett is building at Lorient. The seventh of this class will be fitted out at Brest before being towed to Lorient for completion. The Cassard, first of the antiair version of these destroyers, went into the water on 11 November 1985.

The Foudre, the first of three big landing ships, which was included in the 1984–1988 program, will start building at Brest in 1986.

In the autumn of that same year, the logistic fleet will be reinforced with the fourth Durance-class fleet oiler. Thanks to these ships, the French Navy will have a fleet of modern oilers, something it has lacked for several years.

In the area of weapons and equipment, the SM 39 submarine-launched missile system is now operational, and the same is the case for the most sophisticated version of the MM 40 Exocet. The performance of low-frequency hull-mounted and towed sonars has been or will be improved. For submarine detection, the French Navy is also interested in very low frequency, towed, passive linear sonar, which will be installed in several ships. To evaluate the new towed array and ASW equipment (especially the new Murène torpedo), it has been decided to convert the frigate Commandant Rivière into an experimental ship

In naval aviation, two flotillas of Super-Étendard planes are now equipped to carry the nuclear tactical weapon AN 52 and will be made capable of launching the medium-range air-to-ground missile ASMP. For maritime patrol, the first two of sixteen Atlantique Mk 2 aircraft provided for in the 1984–88 program have been ordered.

ALBANIA

People's Socialist Republic of Albania

Personnel: 3,000 men, with about 300 Coast Guard troops

Merchant Marine (1984): 20 ships - 56,133 grt

Neither the U.S.S.R. nor China is now supporting Albania, and the material condition of the ships listed below must be suffering. All Soviet equipment transferred prior to

• 3 Soviet Whiskey-class submarines

D: 1,050/1,350 tons **S**: 17/13.5 kts **Dim**: $76.0 \times 6.3 \times 4.8$ A: 6/533-mm TT (4 fwd, 2 aft) - 12 torpedoes or 24 mines

Electron Equipt: Radar: 1/Snoop Plate

M: 2 Type 37-D, 2,000-hp diesels, electric motors; 2 props; 2,500 hp Range: 6,000/5 (snorkel) Endurance: 40-45 days Man: 50 tot.

Remarks: All reported out of service in 1980, but may be repairable.

♦ 4 Soviet Kronshtadt-class patrol boats

D: 300 tons (330 fl) S: 18 kts Dim: 52.1 × 6.5 × 2.2

A: 1/85-mm DP — 2/37-mm AA (I × 2) — 6/12.7-mm mg (II × 3) — 2/d.c.t. — 2/ d.c. rack - 2/RBU-900 ASW RL - mines

M: 3 Type 9-D diesels; 3 props; 3,300 hp Range: 3,500/14 Fuel: 20 tons Man: 40 tot.

♦ 6 Chinese Shanghai-II-class patrol boats

D: 122.5 tons (135 fl) S: 28 kts Dim: 38.78 × 5.41 × 1.55 (props)

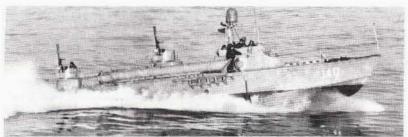
A: 4/37-mm AA (II \times 2) -4/25-mm AA (II \times 2) Electron Equipt: Radar: 1/Pot Head

M: 2/1,200-hp diesels, 2/910-hp diesels; 4 props; 4,220-hp Man: 38 tot.

Electric: 39 kw Endurance: 7 days Range: 750/16.5

Remarks: Transferred 1974-75; probably operational.

♦ 30 Chinese Huchuan-class hydrofoil torpedo boats



Huchuan-class hydrofoil torpedo boat

1976

D: 39 tons (45.8 fl) S: 50 kts Dim: 22.30 × 3.80 (6.26 over fenders) × 1.15

A: 2/533-mm TT -4/14.5-mm mg (II \times 2) Electron Equipt: Radar: 1/Skin Head M: 3 M50-F4 diesels; 3 props; 3,600 hp

Electric: 5.6 kw Range: 500/30 Man: 11 tot.

Remarks: Bow foils only; stern planes on surface. Transferred 1974-75.

♦ 2 Soviet T-43-class ocean minesweepers

D: 500 tons (570 fl) S: 14 kts Dim: 58.0 × 8.6 × 2.3 (3.5 sonar) A: 4/37-mm AA (II × 2) -8/12.7-mm mg (II × 4) -2/d.c.t. - mines Electron Equipt: Radar: 1/Ball End - Sonar: Tamir-11 M: 2 Type 9-D diesels; 2 props; 2,200 hp Range: 3,200/10

♦ 6 Soviet T-301-class coastal minesweepers

D: 145.8 tons (160 fl) S: 12.5 kts Dim: 38.0 × 5.1 × 1.6 A: 1/45-mm AA - 4/12.7-mm mg (II × 2) - mines

M: 3 6-cyl. diesels; 3 props; 1,440 hp Range: 2,500/8 Man: 32 tot.

♦ 1 Soviet Khobi-class small oiler

Patos (ex-Sov. Linda)

D: 1,525 tons (fl) S: 12 kts Dim: 62.0 × 10.0 × 4.4

M: 2 diesels; 2 props; 1,600 hp

Remarks: Transferred 2-59. 795 grt. Sister Semani is civil.

- ◆ 1 Soviet Toplivo-I-class fuel lighter 450 tons (fl)
- ♦ 1 Soviet Sekstan-class degaussing tender

D: 280 tons (345 fl) S: 10 kts Dim: 40.8 × 12.0 × . . . M: 1 diesel; 1 prop; 400 hp Man: 24 tot.

2 Soviet Tuger-class coastal tugs

MUJOULQINAKU N. . .

> D: 300 tons (fl) S: 12 kts Dim: 30.7 × 7.7 × 2.3 M: 1 set reciprocating steam; 1 prop; 500 hp Boilers: 2

♦ 1 Soviet Nyryat-1-class diving tender

D: 120 tons (fl) S: 12 kts Dim: 29.0 × 5.0 × 1.7 M: 1 diesel; 1 prop; 450 hp Range: 1,600/10

4 Soviet Poluchat-I-class torpedo retrievers

Skenderbeu + 3 others

D: 90 tons (fl) S: 18 kts Dim: 29.6 × 5.8 × 1.5 A: 2/14.5-mm mg (II × 1) M: 2 M50 diesels; 2 props; 2,400 hp Range: 450/17; 900/10 Man: 20 tot.

- ♦ 2 Soviet Shalanda-class cargo lighters
- 1 Soviet Duna-class power barge

Democratic and Popular Republic of Algeria

Personnel (1984): 3,800 men with about 300 to 350 officers, not necessarily on fulltime active duty with the navy.

Merchant Marine (1984): 147 ships-1,372,245 grt (tankers: 21 - 596,225 grt)

NAVAL AVIATION: The Algerian Air Force uses 3 Fokker F-27 (Maritime) Mk 400 and 2 Beech Super King Air 200 patrol aircraft for maritime surveillance.

SUBMARINES

Bldr: Baltic SY, Leningrad (In serv. 1957-60) 2 Soviet Romeo class

D: 1,330/1,700 tons S: 15.5/13 kts Dim: 77.0 × 6.7 × 4.9 A: 8/533-mm TT (6 fwd, 2 aft) - 14 torpedoes or 28 mines Electron Equipt: Radar: 1/Snoop Plate - EW: 1/Stop Light Sonar: 1/med. freq.; passive array

M: 2 Type 37 D diesels; electric motors; 2 props; 3,000 hp(sub.) Endurance: 45 days Range: 7,000/5 Man: 56 tot.

Remarks: On 5-year loan; 1 transferred early 1982, second in 2-83. Diving depth, 270-300 meters. One has lower portion of forward edge of sail projecting forward.

FRIGATES

• 3 Soviet Koni class

Bldr: Zelenodolsk SY

901 Mourad Raïs (In serv. 20-12-80) 902 Raïs Kellik (In serv. 24-3-82) 903 Raïs Korfo (In serv. 10-84)



Raïs Kellik

French Navy, 1980

D: 1,900 tons (fl) S: 27 kts Dim: 95.0 × 12.8 × 4.2 (hull)

A: 1/SAN-4 SAM syst. (II × 1; 20 missiles) -4/76.2-mm DP (II × 2) -4/30-mm AA (II \times 2) -2/RBU-6000 -2/d.c. racks - mines

Electron Equipt: Radar: 1/Strut Curve, 1/Don-2, 1/Pop Group, 1/Hawk Screech, 1/Drum Tilt

IFF: 2/Square Head, 1/High Pole B (Salt Pot C on 902) EW: 2/Watch Dog passive - 1/Cross Loop A (D/F), 2/chaff $RL(XVI \times 2)$

M: CODAG: 1/15,000-hp gas turbine, 2/7,500 hp diesels, 3 props; 30,000 hp Range: 1,800/14

Man: 130 tot.

REMARKS: In service dates reflect delivery dates. Have two chaff launchers, deckhouse abaft stack, unlike earlier examples. D.C. racks bolt to mine rails.

GUIDED-MISSILE CORVETTES



Raïs Ali (803)

VP-23, U.S. Navy, 5-82

♦ 3 (+1) Soviet Nanuchka-II-class Bldr: Petrovskiy SY, Leningrad 801 Ra's Hamidou 802 Salah Ra's 803 Ra's Ali



Raïs Hamidou (801)

French Navy, 1980

D: 770 tons (fl) S: 30 kts Dim: 59.3 × 12.6 × 2.4

A: 4/SS-N-2C (II × 2) — 1/SA-N-4 SAM syst. (II × 1; 20 missiles) — 2/57mm DP (II × 1)

Electron Equipt: Radar: 1/Mius, 1/Square Tie, 1/Pop Group, 1/Muff Cob EW: 1/Bell Tap, 1/Cross Loop (D/F), 2/chaff RL (XVIX2) IFF: 2/Square Head, 1/Salt Pot B

M: 3 M507 diesels; 3 props; 24,000 hp Range: 900/30; 2,500/12 Man: 60 tot.

Remarks: 801 arrived in Algeria 4-7-80, 802 in 2-81, 803 in 5-82. A fourth is on order. The Square Tie radar antenna is mounted within the Band Stand radome atop the bridge. Contract to reengine with MTU diesels signed 5-83.

GUIDED-MISSILE PATROL BOATS

• 9 Soviet Osa-II-class

644 645 646 647 648 649 650 651 974

D: 215 tons (240 fl) **S:** 36 kts **Dim:** $39.0 \times 7.7 \times 1.9$ A: 4/SS-N-2B Styx SSM (I × 4) -- 4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole B

M: 3 M504 diesels; 3 props; 15,000 hp Range: 430/34; 790/20 Man: 30 tot.

Remarks: Transferred 1976-78, except 974: 12-80. Contract for replacement of engines by MTU diesels discussed 1983.

• 2 Soviet Osa-I class

D: 175 tons (210 fl) S: 36 kts Dim: 39.0 × 7.7 × 1.8 A: 4/SS-N-2A Styx SSM (I × 4) — 4/30-mm AA (II × 2)

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole B M: 3 M503A diesels; 3 props; 12,000 hp Man: 30 tot.

Remarks: Transferred 1967. No. 643 lost in explosion, 1981.

Note: Six Soviet Komar-class missile boats, transferred 1966, are believed no longer operational.

PATROL BOATS

♦ 1 (+ . . .) Bulgarian design Bldr: Mers-el-Kebir SY

N. . . (In serv. 1985)

D: 500 tons (fl) S: 35 kts Dim: 54.0 × . . . × .

A: 1/76-mm Oto Melara DP—2/40-mm Breda AA (II×1)

Electron Equipt: Radar: . .

M: 3 MTU 20V 538 series diesels; 3 props; 12-15,000 hp

Range: . . . / . . . Man: . . .

Remarks: Ordered 7-83; first unit said to have been launched by 11-84.

Note: Six Soviet SO-1-class patrol boats, transferred 1965-67, have been discarded.

MINE WARFARE SHIPS

♦ 2 Soviet T-43-class ocean minesweepers (transferred 1968)

M 521 M 522

D: 500 tons (570 fl) S: 14 kts Dim: 58.0 × 8.4 × 2.3

A: 4/37-mm AA (II × 2) — 8/12.7-mm mg (II × 4) — 2/d.c.t. — mines M: 2 Type 9 D diesels; 2 props; 2,200 hp Range: 3,200/10

Remarks: Replacement by European-built ships planned. Both reported to be non-operational by 1985.

AMPHIBIOUS WARFARE SHIPS

2 British Brooke Marine design landing ships

| | Bldr | Laid down | L | In serv. |
|---------------------------|---------------------------------|-----------|---------|----------|
| 472 Kalaat Beni Hammed | Brooke Marine, Lowestoft | | 18-5-83 | 4-83 |
| 473 KALAAT BENI RACHED | Vosper-Thornycroft, Woolston | 20-12-82 | 15-5-84 | 10-84 |



Kalaat Beni Rached (473)

Walles Foto, 9-84



Kalaat Beni Hammed (472) - note articulated bow ramp

L. & L. Van Ginderen, 1984

D: 2,130 tons (fl) S: 16 kts Dim: 93.0 (80.00 pp) × 15.0 × 2.5 A: 2/40-mm Breda AA (II \times 1) — 2/20-mm AA ($\tilde{I} \times 2$) Electron Equipt: Radar: 1/Decca TM 1229, 1/Marconi S800 M: 2 MTU 12V7763 TB92 diesels; 2 props; 6,000 hp

Range: 3,000/12 Endurance: 28 days(10 with troops) Man: 81 tot. + 240 troops

Remarks: 472 ordered 10-81; 473 sub-contracted to Vosper-Thornycroft 18-10-82. Naja optronic gun director. Helicopter deck aft. Pontoon sections stowed on deck forward. The vehicle deck is 75 m long by 7.4 m wide and is served by a 30 m by 7 m hatch. The bow ramp extends to 18 m and is 4-5 m wide, while the stern ramp measures 5 m by

AMPHIBIOUS WARFARE SHIPS (continued)

4 m. The traveling crane has a 16-ton capacity. Minimum beaching gradient is 1:40. Can carry 650 tons of cargo, but beaching limit is 450.

• 1 Soviet Polnocny-A-class medium landing ship

471 N



471

1982

D: 770 tons (fl) S: 18 kts Dim: $73.0 \times 8.6 \times 2.0$ A: 2/30-mm AA (II \times 1) — 2/140-mm barrage RL (XVIII \times 2) Electron Equipt: Radar: 1/Don-2, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole A

M: 2 diesels; 2 props; 5,000 hp Range: 1,500/14 Man: 40 tot.

REMARKS: Transferred 9-76.

MISCELLANEOUS

• 1 Soviet Poluchat-1-class torpedo retriever

A 641

D: 90 tons (fl) S: 18 kts Dim: 29.6 × 5.8 × 1.5 M: 2 M50 diesels; 2 props; 2,400 hp Man: 20 tot.

• 1 Soviet Nyryat-1-class diving tender

D: 120 tons (fl) S: 12 kts Dim: 29.0 × 5.0 × 1.7 M: 1 diesel; 1 prop; 450 hp Range: 1,600/10

• 1 tug/diving tender (purchased 1965)

VP 650 YAVDEZAN

♦ 1 survey craft Bldr: Matsukara, Hirao, Japan

A 673 EL Idrissi (L: 17-4-80) D: 250 tons

COAST GUARD

♦ 3 (+3) British Brooke Marine 37.5-meter design patrol boats
342: Brooke Marine, Lowestoft; others: ONCN/CNE, Mers-el-Kebir

341 El Yakedh (In serv. 12-82) 344 N. . . (In serv. 2-85) 342 El Morakeb (In serv. 4-83) 345 N. . . (In serv. 1985) 343 N. . . (In serv. 5-84) 346 N. . . (In serv. 1985)

D: 166 tons (250 fl) **S:** 27 kts **Dim:** 37.50 (34.74 pp) \times 6.86 \times 1.78 **A:** 1/76-mm OTO Melara DP — 2/14.5-mm Soviet mg(I \times 2)

Electron Equipt: Radar: 1/Decca 1226

M: 2 MTU 12V538 TB92 diesels; 2 props; 6,000 hp Range: 2,500/15 Man: 3 officers, 24 men



El Yakedh (341)

French Navy, 9-84



El Morakeb (342)

Skyfotos, 1983

Remarks: Also known as "Kebir" class. Program replaced indigenous missile boat in 1981. First Algerian-built unit planned for 10-83 delivery. Laurence Scott optronic GFCS. Planned Soviet twin 30-mm AA aft not mounted on first two, but may replace 76-mm on others.

• 6 Mangusta-class patrol boats

Bldr: Baglietto, Italy (In serv. 1977-78)

323 Ombrine 324 Dorade 331 Requin 332 Espadon 333 Marsouin 334 Murene

D: 91 tons (fl) S: 32 kts Dim: $30.0 \times 5.84 \times 2.1$ A: 2/25-mm AA (II \times 2) — 2/23-mm AA (II \times 1)

Electron Equipt: Radar: 1/3RM 20 SMA M: 3 diesels; 3 props; 4,050 hp Range: 800/24; 1,400/12.5

Man: 3 officers, 11 men



Requin (now renumbered and armed)

C. Martinelli, 1977

♦ 0 (+3) P-1200-class patrol boats

Bldr: Watercraft, Shoreham, U.K.

D: 38.5 tons (fl) S: 35 kts Dim: 20.80 (18.00 wl) × 5.79 × 1.52

A: 1/20-mm AA — 2/7.72-mm mg Electron Equipt: Radar: 1/nav.

M: 2 M.A.N. D2540 diesels; 2 props; 1,300 hp Range: 600/21

Man: 11

Remarks: Ordered 12-84. Glass-reinforced plastic construction. Also ordered were two Type 802, 8-m habor patrol craft with twin Volvo AQAD40 inboard/outboard engines.

◆ 10 Type 20-GC-class patrol craft Bldr: Baglietto, Italy (In serv. 8-76 to 12-76)

100 112 113 114 221 222 235 236 237 325



Baglietto - 20-GC class

C. Martinelli, 1977

ALGERIA (continued)
COAST GUARD (continued)

D: 44 tons (fl) S: 36 kts Dim: 20.4 × 5.2 × 1.7 A: 1/20-mm AA M: 2 CRM 18DS diesels; 2 props; 2,700 hp Range: 445/20 Man: 11 tot.

♦ 12 18-ton patrol craft Bldr: ONCN/CNE, Mers-el-Kebir (In serv. 1982-83)

♦ 2 small fisheries protection craft

DJEBEL ANTAR DJEBEL HANDA

ANGOLA

People's Republic of Angola

Personnel: (1984): about 1,500 total

Merchant Marine (1984): 87 ships — 97,283 grt (tankers: 3 — 2,052 grt)

NAVAL AVIATION: One Fokker F-27 Maritime patrol aircraft.

Note: The ex-Portuguese craft were located in Angola in 1975 and were transferred on independence.

GUIDED-MISSILE PATROL BOATS

• 6 Soviet Osa-II class

D: 215 tons (245 fl) **S:** 36 kts **Dim:** $39.0 \times 7.7 \times 1.8$

A: 4/SS-N-2 Styx $(I \times 4) - 4/30$ -mm $(II \times 2)$ Man: 30 tot.

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole B

M: 3 Type M504 diesels; 3 props; 15,000 hp Range: 430/34; 790/20

Remarks: Delivered in pairs, 10-82, 12-82, and 11-83 by RO/FLO cargo ship Stakhanovets Petrash.

TORPEDO BOATS

4 Soviet Shershen class

D: 150 tons (180 fl) **S:** 45 kts **Dim:** $34.0 \times 7.2 \times 1.5$

A: 4/30-mm AA (II × 2) — 4/533-mm TT

Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole A

M: 3 M503A diesels; 3 props; 12,000 hp Range: 450/34; 700/20

Remarks: Delivered 12-77 to 11-79. Unlike many recent transfers of this class, all retained torpedo tubes.

PATROL BOATS

◆ 2 Soviet Zhuk class (transferred 23-1-77)

D: 50 tons (60 fl) **S:** 34 kts **Dim:** 26.0 × 4.9 × 1.5

A: 4/14.5-mm mg (II × 2) M: 2 M50 diesels; 2 props; 2,400 hp

◆ 2 Soviet Poluchat-I class (transferred 12-79)

D: 90 tons (fl) S: 18 kts Dim: 29.6 × 5.8 × 1.5 Range: 450/17; 900/10

A: 2/14.5-mm mg (II × 1) M: 2 M50 diesels; 2 props; 2,400 hp Man: 20 tot.

♦ 5 Portuguese Argos class Bldr: Castelo SY

(P 375, P 1130: Alfeite Navy Yd, Lisbon) In serv. 1963-65

P 361 (ex-Lira)

P 375 (ex-Escorpido)

P 1130 (ex-Centauro)

P 362 (ex-Orion) P 379 (ex-Pegaso)

D: 180 tons (210 fl) S: 18 kts Dim: 41.6 × 6.2 × 2.2 Fuel: 16 tons

A: 2/40-mm AA (I × 2) M: 2 Maybach diesels; 2 props; 2,000 hp Man: 24 tot.

Remarks: Two others, Argos and Dragao, transferred for cannibalization.

♦ 1 Portuguese Jupiter class

Bldr: Mondego SY (In serv. 1965)

P 1133 (ex-Venus)

D: 32 tons (43.5 fl) **S:** 20 kts **Dim:** 20.7 × 5.0 × 1.3 **A:** 1/20-mm AA **M:** 2 Cummins diesels; 2 props; 1,270 hp

♦ 5 Portuguese Bellatrix class
Germany (In serv. 1961-62)

Bldr: Bayerische Schiffsbaugesellschaft, West

P 366 (ex-Espiga)

P 368 (ex-Pollux)

P 378 (ex-Rigel)

P 367 (ex-Fomelhaut)

P 377 (ex-Altair)

D: 23 tons (27.6 fl) S: 15 kts Dim: 20.5 × 4.6 × 1.2

A: 1/20-mm AA — 1/37-mm RL (atop 20-mm AA)

M: 2 Cummins diesels; 2 props; 470 hp Man: 7 tot.

AMPHIBIOUS WARFARE SHIPS

• 2 commercial-design vehicle landing craft Bodewes, Francker, Neth. (In serv. 1979)

Bldr: Scheepswerf Ton

47 10 DICIEMBRE 48 11 NOVIEM

D: 850 (fl) **S:** 10 kts **Dim:** 53.0 (pp) \times 11.5 \times 2.2

M: 2 Caterpillar diesels; 2 props; . . . hp

Remarks: 446 grt/575 dwt. May be engaged in civil cargo-carrying tasks.

• 3 Soviet Polnocny-B-class medium landing ships

Gdansk, Poland

D: 800 tons (fl) S: 19 kts Dim: $74.0 \times 8.6 \times 2.0$ A: 2/30-mm AA (II \times 1) — 2/140-mm barrage RL (XVIII \times 2)

Electron Equipt: Radar: 1/Don 2, 1/Drum Tilt

IFF: 1/Square Head

M: 2 diesels; 2 props; 5,000 hp Range: 1,500/14 Man: 40 tot.

Remarks: First transferred 16-12-77, second 16-12-78, third 1-12-79.

 1 Portuguese Alfange-class medium landing ship serv. 1965) Bldr: Mondego SY (In

Bldr: Polnocny SY,

N (ex-Alfange)

D: 500 tons (fl) S: 11 kts Dim: 57.0 × 11.8 × 1.9 A: 2/20-mm AA M: 2 diesels; 2 props; 1,000 hp Range: 1,500/9 Man: 14 tot. + 35 troops

Remarks: A second unit was not placed in service. Design based on British LCT (4) class of World War II.

♦ 5 Soviet T-4-class landing craft (Transferred 1976)

D: 70 tons (fl) S: 10 kts Dim: 19.0 × 4.3 × 1.0 M: 2 diesels; 2 props, 600 hp Man: 5 tot.

♦ Up to 9 Portuguese LDM-400-class landing craft

D: 56 tons (fl) S: 9 kts Dim: 17.0 × 5.0 × 1.2 A: 1/20-mm AA

M: 2 Cummins diesels; 2 props; 450 hp

ANTIGUA-BARBUDA

MERCHANT MARINE (1984): 3 ships - 559 grt

COAST GUARD

 1 U.S. 65-ft Commercial Cruiser-class patrol craft Inc., Morgan City, Louisiana

Bldr: Swiftships,

P-01 LIBERTA (In serv. 30-4-84)



Liberta (P-01)

Swiftships, 1984

D: . . . tons S: 23 kts Dim: 19.96 × 5.59 × 1.52 A: 1/12.7-mm mg Electron Equipt: Radar: 1/Raytheon 1210 M: 2 G.M. 12V71 TI diesels; 2 props; 1,350 hp Electric: 20 kw Range: 500/18 Man: 6 tot.

Remarks: Aluminum construction. U.S. Grant-Aid.

ARGENTINA

Argentine Republic

PERSONNEL 1985: 23,400 men, including 2,300 officers and 3,000 Marines

Merchant Marine 1984: 530 ships - 2,422,111 grt (tankers: 74-883,227 grt)

Note: Fiscal constraints have forced cutting new programs, the disposal of older ships, the reduction of manpower by 7,500 (including 500 officers and 3,000 Marines), and a severe restriction in annual steaming days.

NAVAL AVIATION: In 1985, the aircraft for shipboard service included: 14 Super Étendard (4 in storage, remainder now flown from land), 6 A-4Q Skyhawk fighterbombers, and 6 S-2E and 3 S-2A Tracker ASW aircraft. Helicopters: 5 Sikorsky SH-3D, 2 WG-13 Mk 23 Lynx, 6 Hughes 500M Cayuse, 2 Sikorsky S-61NR, and 8 Alouette-III.

For land-based duties: 3 Aeromacchi MB-339AA and 8 MB-326GB attack/trainers; 3 Fokker F-28-3000, 1 BAe 125 Series 400A, 5 Lockheed L-188 Electra, and 2 Short Skyvan transports; 8 Beech Super King Air 200, 5 Beech B80 Queen Air, and 3 Fairchild Porter light transports; 11 Beech T-34 C-1 trainers; and 2 Puma helicopters.

Orders for 4 additional Lynx helicopters have been canceled by Great Britain. Because it has proven difficult to operate the super Étendard on the small, slow Veinticinco de Mayo, 12 ex-Israeli A-4E Skyhawks were ordered in 12-84. 12 ex-Brazilian Air Force EMB-326GB Xavante were purchased late in 1982, and 7 Electra transports intended for conversion to maritime patrol/ASW aircraft in 2-83: 2 with APS-20 radar and Exocet launch capability, 2 with maritime search radars, intercept gear and chaff, and 3 for survey and transport duties.



Super Étendard 3-A-204, one of two aircraft in the attack on HMS Sheffield R. Scheina, 1982

WARSHIPS IN SERVICE OR UNDER CONSTRUCTION AS OF 1 JANUARY 1986

| | L | Tons Std. | Main Armament |
|----------------------|---------|-----------|---|
| ♦ 4 (+2) submarines | | | |
| 2(+2) GERMAN TR-1700 | 1980-82 | 1,750 | 6/533-mm TT |
| 2 German 209 | 1972-73 | 980 | 8/533-mm TT |
| ♦ 1 aircraft carrier | | | |
| VEINTICINCO DE MAYO | 1943 | 15,892 | 9/40-mm AA 19 aircraft |
| ♦ 2 destroyers | | | |
| 2 Sheffield | 1972-74 | 3,150 | 4 Exocet, 1 Sea Dart SAM, 1/114-mm DP, 1 ASW helicopter |
| ♦ 9 (+4) frigates | | | |
| 4 MEKO 360 | 1981-82 | 2,900 | 8 Exocet, Albatros, 1/127-mm DP, 2 helicopter |
| 1 (+5) MEKO 140 | 1982 | 1,200 | 4 Exocet, 1/76-mm DP, helicopter |
| 3 A-69 | 1977-80 | 1,170 | 4 Exocet, 1/100-mm DP |
| ♦ 2 corvettes | | | |
| 2 Achomawi | 1944-45 | 1,235 | 4/40-mm AA |
| | | | |

- 6 patrol boats
- 6 minesweeper/minehunters
- ♦ 1 landing ship

AIRCRAFT CARRIER

Note: A 30,000-ton replacement for Veinticino de Mayo is planned, finances permitting.

♦ 1 British Colossus-class

| | Bldr | Laid down | L | In serv. |
|------------------------|---------------|-----------|----------|----------|
| VEINTICINCO DE MAYO | Cammell Laird | 3-12-42 | 30-12-43 | 17-1-45 |
| (ex-Karel Dorman, ex-V | enerable) | | | |

D: 15,892 tons (19,896 fl) **S:** 24.5 kts (limited to 18.0) Dim: 212.67 (192.04 pp) × 24.49 (40.66 flight deck) × 7.5

A: 9/40-mm AA (I × 10) - 10 A-4E Skyhawk, 5 S-2E Tracker, 2 SH-3D helo

Electron Equipt: Radar: Dutch 2/LW-02, 1/SGR-109 (height-finding), 1/SGR-105 (DA-05), 1/SGR-103 (ZW-01), 1/SMA MM/SPN-720 air

control - TACAN: URN-20



Veinticinco De Mayo

R. Scheina, 1982

M: 2 sets Parsons GT; 2 props; 40,000 hp Electric: 2,500 kw Boilers: 4 Admiralty 3-drum type; 30.23 kg/cm² (since refit), 371° C Fuel: 3,200 tons Range: 6,200/23; 12,000/14 Man: 1,509 tot.

Remarks: Purchased by The Netherlands from the British Navy in 1948. Rebuilt from 1955 to 1958 by Wilton-Fijenoord; 165.80 meters angled flight deck, steam catapult, mirror optical landing equipment, new antiaircraft guns, and new radar equipment of Dutch conception and construction. Modified for service in the tropics. Partially air-conditioned. In 1967 new boilers were installed from the British aircraft carrier Leviathan, which was never completed. Purchased in 1968 by Argentina and again refitted, recommissioning 22-8-69. She is equipped with the British C.A.A.I.S. data display system, compatible with the ADAWS-4 data system on the Sheffield-class destroyers. 1980 refit enlarged flight deck to permit deck-parking three additional aircraft. Altered 1982-83 to permit operating Super Étendard fighter/bombers; 1/40mm AA removed. Super Étendards replaced by Skyhawks, 1985. Persistent engineering problems. Planned to replace by 1992.

SUBMARINES

♦ 1 (+3) TR-1700-class diesel-electric attack submarines

| | Bldr | Laid down | L | In serv. |
|-----------------|---------------------------------------|-----------|---------|----------|
| S 33 Santa Cruz | Thyssen Noordseewerke, | 6-12-80 | 28-9-82 | 14-12-84 |
| 0.01.0 | Emden | 18-3-82 | 20-6-83 | O.E. |
| S 34 San Juan | Thyssen Noordseewerke, Emden | 18-3-82 | 20-0-83 | 85 |
| S 35 N | Manuel Domecq Garcia, Buenos Aires | 14-10-83 | | |
| S 36 N | Manuel Domecq Garcia, Buenos Aires | | # (# #) | * * * |



Santa Cruz (S 33) - on trials

Thyssen, 1984

D: 1,770 tons (2,150 surf./2,364 sub. fl)

S: 25 kts (sub) — 13 snorkel, 15 kts (surf) Dim: 66.00 × 7.30 × 6.50

Range: 20/25, 50/20, 110/15, 460/6 sub. — 12,000/8 surf.

A: 6/533-mm TT, 22 SST-4 wire-guided torpedoes

M: Diesel-electric: 4/MTU 16V652 MB80 1,100 kw generator sets; 1 6,600-kw

motor; 1 prop, 8,970 hp (8,000 sust.)

Fuel: 314 tons Endurance: 30 days Man: 30 tot.

Remarks: Ordered 30-11-77. Originally only the first to be build in Germany. Two smaller Type TR-1400 replaced by 2 TR-1700 in the 2-82 change to order. However, late in 1984, first Argentine-built unit reportedly for sale, indicating only two German-built units may serve in Argentine Navy, last two probably canceled. In addition, delivery of S 34 was delayed through 9-85 or later for lack of payments. 300-m depth. Battery has eight groups of 120 cells, 5,858 amp/10 hr. H.S.A. SINBADS weapons control system, SAGEM plotting table. Pressure hull 48.0 m long. Torpedoes auto-reload in 50 seconds.

SUBMARINES (continued)



San Juan (S 34)

Thyssen, 1984

German Type 209 class diesel-electric coastal submarines

| | Bldr | Laid down | L | In serv. |
|---------------|---------------------|-----------|---------|----------|
| S 31 SALTA | Howaldtswerke, Kiel | 3-4-70 | 9-11-72 | 7-3-74 |
| S 32 San Luis | Howaldtswerke, Kiel | 1-10-70 | 3-4-73 | 24-5-74 |



Salta

Argentine Navy, 1982

D: 980 tons standard, 1,105, surfaced, 1,230 submerged

Dim: 55.9 × 6.20 × 5.50 S: 23 max. submerged, 12 snorkel; 11 surf.

A: 8/533-mm TT (14 German SST-4 and U.S. Mk 37 torpedoes)

M: 4 MTU 12V493 TY60, 600-hp diesels, 4/405-kw generators, Siemens electric motor; 1 prop; 5,000 hp

Endurance: 40 days Fuel: 63 tons

Range: 230/8; 400/4 submerged; 6,000/8 snorkel

Man: 5 officers, 26 men

Remarks: Built in four sections at Kiel and assembled at the Navy Yard in Rio Santiago. San Luis fired 6 torpedoes, without success, in the Falklands War; Salta did not take part. H.S.A. M8 fire-control system.

DESTROYERS

♦ 2 British Sheffield-class guided-missile destroyers

| | Bldr | Laid down | L | In serv. |
|------------------------|-------------------------|-----------|----------|----------|
| D 1 Hercules | Vickers, Barrow | 1971 | 24-10-72 | 10-5-76 |
| D 2 SANTISIMA TRINIDAD | Ast. Nav., Rio Santiago | 2-72 | 9-11-74 | -81 |

D: 3,150 tons (4,100 fl) **S:** 28 kts **Dim:** 125.0 (119.5pp) \times 14.34 \times 4.2 (hull) A: 4/Exocet MM 38 SSM (I × 4) - 1/Sea Dart Mk 30 Mod. 2 SAM syst. (II × 1, 20 missiles) — 1/114-mm DP Mk 8 — 2/20-mm AA — 1/WG 13 Lynx helicopter — 6/324-mm ASW TT (III \times 2)

Electron Equipt: Radar: 1/965M, 1/992Q, 2/909, 1/1006 Sonar: 1/184M, 1/162M—EW: intercept array

M: COGOG 2 Olympus TM 3B gas turbines, 27,200 hp each for boost; 2 Tyne RM 1A gas turbines, 4,100 hp each for cruising; 2 CP, 5-bladed props

Electric: 4,000 kw Range: 4,000/18 Man: 270 tot.



Hercules (D 1)

Argentine Navy, 1984



 ${\bf Santisima\ Trinidad--} Exocet\ has\ replaced\ boats$

L. & L. Van Ginderen, 4-81

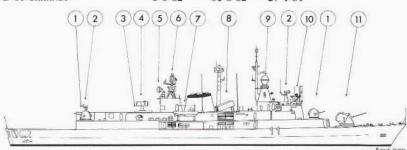
Remarks: Ordered 18-5-70. D 2 was sabotaged on 22-8-75 and was delayed, running initial trials on 7-3-80. D 1, refitted 1980, had MM 38 Exocet missiles added atop the hangar; these were relocated in place of the boats abreast the stack in both, early 1982, when EW gear was also fitted. Have ADAWS-4 data system. Both reported to be for sale in 9-84, due to inability to obtain spares from Britain.

Note: Ex-U.S. Gearing-class destroyer Comodoro Py (D 27, ex-Perkins, DD 877) stricken 1984. Ex-U.S. Allen M. Sumner-class destroyers Bouchard (D 26, ex-Borie, DD 704) and Piedrabuena (D 29, ex-Collett, DD 730) stricken 1984-85; sister Segui (D 25, ex-Hank, DD 702) stricken 1983.

FRIGATES

♦ 4 MEKO-360 H2 Class Bldr: Blohm + Voss, Hamburg

| | Laid down | L | In serv. |
|----------------------|-----------|---------|----------|
| D 10 Almirante Brown | 8-9-80 | 28-3-81 | 2-2-83 |
| D 11 La Argentina | 31-3-81 | 25-9-81 | 19-7-83 |
| D 12 HEROINA | 24-8-81 | 17-2-82 | 7-11-83 |
| D 13 SARANDI | 9-3-82 | 31-8-82 | 27-4-84 |



1. Twin 40-mm AA 2. LIROD radar/optronic director 3. SCLAR chaff/flare rocket launcher 4. Albatros SAM launcher 5. STIR missile director 6. DA-08 long-range radar antenna 7. triple ASW torpedo tubes 8. quadruple MM 40 Exocet ramps (under shield) 9. WM-25 track-while-scan radar 10. ZW-06 navigational radar 11. 127-mm dual-purpose gunmount

FRIGATES (continued)



Sarandi (D 13)

P. Voss, 5-84



La Argentina (D 11)

G. Gyssels, 6-83



Almirante Brown (D 10)

French Navy, 2-83

D: 2,900 tons (3,360 fl) S: 30.5 kts

Dim: 125.9(119.0 pp) × 15.0 × 4.32(5.80 sonar)
A: 8/MM 40 Exocet SSM (IV × 2) — 1 Albatros SAM syst. (VIII × 1; 24 Aspide missiles) - 1/27-mm OTO Melara DP - 8/40-mm Breda AA (II × 4) - 6/324-

mm ILAS-3 ASW TT (III × 2; 18 torp.) — 2/helicopters (10 ASW torp.) Electron Equipt: Radar: 1/H.S.A. ZW-06, 1/H.S.A. DA-08A, 1/H.S.A. WM 25, 1/STIR, 2/H.S.A. LIROD

Sonar: Krupp Atlas 80, hull-mounted

EW: AEG-Telefunken syst., 2/SCLAR chaff (XX × 2)

M: COGOG: 2 Olympus TM 3B gas turbines, 25,800 hp each; 2 Tyne RM 1C, 5,100 hp each for cruise; 2 Escher-Wyss CP props; 51,600 hp max.

Electric: 2,600 kw (2/940-kw sets, 2/360 kw) Range: 4,500/18

Man: 26 officers, 84 petty officers, 90 men



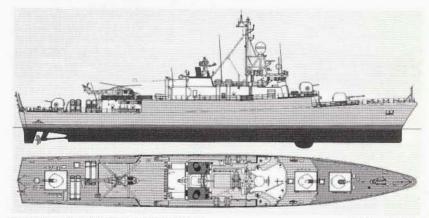
Almirante Brown and La Argentina on trials Schulz-Alex/Blohm + Voss, 1983

REMARKS: Considered to be destroyers by Argentine Navy. Ordered 11-12-78 as a class of six, four of which were to be built in Argentina, but altered to four when MEKO-140-series frigate program was introduced. Albatros system has a 16-missile Aspide SAM rapid-reload magazine nearby. SEWACO weapons data/control system. The two H.S.A. LIROD radar/optronic GFCS each control two twin 40-mm AA, for which 10,752 rounds can be carried. Graseby G1738 towed torpedo decoy system. Four Lynx helicopters for these ships canceled by U.K., 1982. The MEKO concept calls for modularized weapons and electronics systems, to permit rapid modernization and repair. Nigeria's Aradu is very similar.

1 (+5) MEKO 140 A16 class

Bldr: AFNE, Rio Santiago, Ensenada

| | Laid down | L | In serv. |
|--------------|-----------|---------|----------|
| P 4 Espora | 10-3-80 | 23-1-82 | 1985 |
| P 5 Rosales | 7-1-81 | 4-3-83 | |
| P 6 Spiro | 1-4-82 | 24-6-83 | |
| P 7 PARKER | 9-2-82 | 31-3-84 | |
| P 8 Robinson | 6-6-83 | 11-84 | * * * |
| P 9 Seaver | 1-12-83 | | 4.4 |



MEKO 140 A 16 class with hangar

Blohm + Voss



Espora (P 4) on trials

Blohm + Voss, 1984

D: 1,560 tons (1,790 fl) **S:** 27 kts **Dim:** 91.2 (86.4 pp) \times 11.0 \times 3.33 (hull) **A:** 4/MM 38 Exocet SSM (II \times 2) — 1/76-mm DP OTO Melara — 4/40-mm AA Breda (II \times 2), 2/12.7-mm mg (I \times 2) — 6/324-mm ASW TT (III \times 2) — 1/helo Electron Equipt: Radar: 1/Decca TM 1226, 1/H.S.A. DA-05/2, 1/H.S.A. WM-28, 2/H.S.A. LIROD

Sonar: 1/ASO-4 EW: RDC-2ABC and RCM-2 systems, 2/Dagaie chaff RL

M: 2 SEMT-Pielstick 16 PC2-5V400 diesels; 2/5-bladed props; 22,600 hp Electric: 1,410 kVA (3 × 470 kVA diesel sets) Range: 4,000/18

Fuel: 230 tons Man: 11 officers, 46 petty officers, 36 men

Remarks: All reported to be available for sale, late 1984. Ordered 8-79. Blohm + Voss design, based on Portuguese João Coutinho class. Have fin stabilizers. LIROD radar/ electro-optical system controls 40-mm AA. Carry Whitehead A244S ASW torpedoes. To carry 5 tons aviation fuel, 70 tons fresh water. HSA DAISY data system. Telescoping helo hangar on P7-P9 only.



Espora (P 4) - on trials (no-hangar version)

Blohm + Voss, 1984

FRIGATES (continued)

♦ 3 French type A-69 class

| | Laid down | L | In serv. |
|------------------------------------|-----------|---------|----------|
| P 1 DRUMMOND (ex-Good Hope, F 432) | 12-3-76 | 5-3-77 | 10-78 |
| P 2 Guerrico (ex-Transvaal, F 102) | 1-10-76 | 9-77 | 10-78 |
| P 3 Granville | end-78 | 28-6-80 | 22-6-81 |

Bldr: Lorient DY



Granville (P 3)

Argentine Navy, 1984

D: 1,100 tons (1,250 fl) S: 24 kts

Dim: 80.5 (76.0 pp) × 10.3 × 3.0 (5.2 sonar)

A: 4/MM 38 Exocet (II × 2) - 1/100-mm DP mod. 1968 - 2/40-mm AA $(II \times 1) - 2/20$ -mm AA $(I \times 2) - 6/324$ -mm ASW TT $(III \times 2)$

Electron Equipt: Radar: 1/Decca 1226, 1/DRBV-51A, 1/DRBC-32C Sonar: Diodon

M: 2 SEMT-Pielstick 12 PC 2 diesels; 2 CP props; 11,000 hp Electric: 840 kw Range: 3,000/18; 4,500/15 Man: 5 officers, 79 men

Remarks: The first two were originally ordered by South Africa, but delivery was embargoed. Purchased by Argentina, 25-9-78 to augment fleet in case of war with Chile. Armament and some electronic gear differ from French Navy version. P 3 has Breda twin 40-mm AA controlled by a CSEE Naja optronic GFCS; the others have older Bofors L60 mountings. P 3 has Dagaie chaff system. P 2 damaged on 7-4-82 during the invasion of South Georgia; repaired.

CORVETTES

• 2 U.S. Achomawi class Bldr: Charleston SB & DD Co.

| | Laid down | L | In serv. |
|---------------------------------|-----------|---------|----------|
| A 1 COMANDANTE GENERAL IRIGOYEN | 16-6-44 | 2-11-44 | 10-3-45 |
| (ex-Cahuilla, ATF 152) | | | |
| A 3 Francisco De Churruca | 7-11-44 | 17-3-45 | 16-6-45 |
| (ex-Luiseno, AFT 156) | | | |



Comandante General Irigoyen (A 1)

R. Scheina, 1980

D: 1,235 tons (1,675 fl) **S:** 16.5 kts **Dim:** 62.48 (59.44 wl) \times 11.73 \times 4.67 A: 4/40-mm AA (II \times 2, I \times 2) — 2/20-mm AA (I \times 2)

M: 4 G.M. 12-278A diesels, electric drive; 1 prop; 3,000 hp

Fuel: 363 tons Electric: 400 kw Range: 7,000/15; 15,000/8 Man: 85 tot.

Remarks: A 1 transferred 1961 as an ocean tug; rerated a patrol ship in 1966. A 3 purchased 1-7-75. Retain tug and salvage facilities. A 3: 2/40-mm AA (II × 1) only.

Note: Three ex-U.S. Sotoyomo-class seagoing tugs used as patrol vessels have been stricken: Yamona (A 6, ex-Maricopa, ATA 146) and Alfarez Sobral (A 9, ex-Catawba, ATA 210) in 1984, and Comodoro Somellera (A 10, ex-Salish, ATA 187) in 1985.

PATROL BOATS

◆ 2 Intrepida class (Lürssen TNC 45 design)

| | Bldr | L | In serv. |
|------------------|--------------------------|----------|----------|
| ELPR 1 INTREPIDA | Lürssen, Bremen-Vegesack | 12-12-74 | 20-7-74 |
| ELPR 2 INDOMITA | Lürssen, Bremen-Vegesack | 8-4-74 | 12-74 |



Intrepida (ELPR 1)

Argentine Navy, 1984

D: 240 tons (265 fl) S: 37.8 kts Dim: 44.9 (42.3 pp) × 7.4 × 2.28 (prop.) A: 1/76-mm DP OTO Melara — 2/40-mm wire-guided TT (German SST-4 torp.)

Electron Equipt: Radar: 1/Decca 101, 1/HSA WM22

M: 4 MTU MD 872 diesels; 4 props; 14,400 hp Electric: 330 kw Range: 640/36; 1,700/16 Man: 5 officers, 37 men

Remarks: Anti-rolling stabilizers. Plans canceled to acquire two more. Have passive threat-warning intercept gear.

 4 Israeli Dabur class Bldr: Israeli Aircraft Industries, Israel (In serv. 1978)

P 61 BARADERO P 62 BARRANQUERAS P 63 CLORINDA P 64 CONCEPCION DEL URUGUAY

D: 26.8 tons (34.2 fl) S: 22 kts Dim: 19.8 × 5.4 × 1.75

A: 2/20-mm AA (I × 2) -4/12.7-mm mg (II × 2)

Electron Equipt: Radar: Decca 101

M: 2 G.M. 12V-71T diesels; 2 props; 1,200 hp Range: 700/16 Man: 8 tot.

MINE WARFARE SHIPS

• 6 British "Ton"-class minesweepers/minehunters

| | L | | L |
|-------------------------------|----------|--|----------|
| M 1 Neuquen (ex-Hickleton) | 26-1-55 | M 4 Tierra Del Fuego (ex-Bevington) | 17-3-53 |
| M 2 Rio Negro (ex-Tarlton) | 10-11-54 | M 5 Chaco (ex-Rennington) | 27-11-58 |
| M 3 CHUBUT (ex-Santon) | 18-8-55 | M 6 FORMOSA (ex-Ilmington) | 8-3-54 |



Three Argentine "Tons"; minehunter at left

L. & L. Van Ginderen, 4-84

D: 370 tons (425 fl) S: 15 kts Dim: 46.33 (42.68 pp) × 8.76 × 2.50 A: 1/40-mm AA Electron Equipt: Radar: Type 978

M: 2 Paxman Deltic 18A-7A diesels; 2 props; 3,000 hp Fuel: 45 tons Range: 2,300/13; 3,000/8 Man: 27 tot. (M 5, M 6: 36 tot.)

Remarks: M 5 and M 6 refitted as minehunters in 1968, with Plessey Type 193M sonar. The others may retain Mirrlees JVSS-12 diesels, totaling 2,500 hp. In poor condition, may soon be stricken.

AMPHIBIOUS WARFARE SHIPS

♦ 1 new-construction tank landing ship Bldr: Hyundai SY, South Korea

Laid down L In serv.

D: 2,000 tons light (3,770 fl) S: 15 kts Dim: 100.0 (96.1 pp) × 15.4 × 4.2 max. A: 3/40-mm AA (I × 3) — 2/20-mm AA (I × 2)

Electron Equipt: Radar: 1/navigational

AMPHIBIOUS WARFARE SHIPS (continued)

M: 2 diesels; 2 props; 7,600 hp (6,860 sust.) Electric: 750 kw Range: 7,500/13 Man: 13 officers, 104 men + 200 troops

Remarks: Ordered 1982. Max. cargo: 1,300 tons; beaching load: 690 tons. Can carry 17 battle tanks. Platform for 2 helicopters. Davits for 4 LCVP landing craft.

Note: May have been canceled.

♦ 1 Modified U.S. DeSoto County-class tank landing ship

Bldr L In serv. Q 42 Cabo San Antonio AFNE, Rio Santiago 1968 2-11-78



Cabo San Antonio (Q 42)

Argentine Navy, 1983

D: 4,300 tons (8,000 fl) S: 16 kts Dim: 134.72 (129.8 wl) \times 18.9 \times 5.5 A: 12/40-mm AA (IV \times 3) — 2/20-mm AA (I \times 2)

A: 12/40-mm AA (IV \times 3) -2/20-mm AA (I \times 2) Electron Equipt: Radar: 1 navigational, 1/AWS-1

M: 6 diesels; 2 CP props; 13,700 hp Electric: 900 kw Man: 124 tot.

Remarks: Differs from U.S. Navy version primarily in armament and in having a 60-ton Stülcken heavy-lift kingpost set amidships. Carries 4 LCVP. Tank deck 88-m long can stow 23 medium tanks. 700 troops can be carried. Three U.S. Mk 51 Mod. 2 optical GFCS.

♦ 4 U.S. LCM(6)-class landing craft (In serv. 6-71)

EDM 1 EDM 2 EDM 3 EDM 4

D: 24 tons (56 fl) S: 10 kts Dim: 17.07 × 4.37 × 1.17 (aft)

A: 2/12.7-mm mg M: 2 Gray Marine 64 HN9 diesels; 2 props; 330-450 hp

Range: 130/10 Cargo: 30 tons

♦ 8 U.S. LCVP-class landing craft

EDVP 30-37

D: 13 tons (fl) **S:** 9 kts **Dim:** $10.90 \times 3.21 \times 1.04$ (aft)

M: 1 Gray Marine 64 HN9 diesel; 225 hp Range: 110/9

Remarks: It is not known whether the above list includes the four LCVP carried by Cabo San Antonio. Cargo: 36 troops or 3.5 tons. Five others discarded post-1982.

HYDROGRAPHIC SHIPS

♦ 1 Puerto Deseado class

Bldr Laid down L In serv.
Q 20 PUERTO DESEADO Astarsa, San Fernando 17-3-76 4-12-77 (trials)



Puerto Deseado (Q 20) nested with Comodoro Rivadavia (Q 11), Cormoran (Q 15), and Petrel (Q 16)

D: 2,133 tons S: 15 kts Dim: 70.81 (67.0 pp) × 13.2 × 4.5 M: 2 Fiat-GMT diesels; 2 props; 2,700 hp Electric: 1,280 kVA Range: 12,000/12 Man: 12 officers, 53 men, 9 scientists, 10 technicians

Remarks: Used for hydrometeorological reporting. Four Hewlett-Packard 2108-A computers for data analysis/storage. Has seismic, gravimetric, and magnetometer equipment. Omega- and NAVSAT-equipped. Has geology laboratory. Ice-reinforced. The previously listed Alvaro Alberto, completed 1983, is subordinate to the Ministry of Marine, as is the Capitan Oca Balda (598 dwt), completed 1983.

♦ 1 Comodoro Rivadavia class

Bldr: Mestrina, el Tigre (L: 29-11-73, in serv. 6-12-76)

Q 11 COMODORO RIVADAVIA

D: 655 tons (830 fl) S: 12 kts Dim: 52.2 × 8.8 × 2.6 Man: 27 tot. M: 2 Werkspoor Stork RHO-218K diesels; 1,160 hp Range: 6,000/12

♦ 2 inshore survey craft

Bldr: Cadenazzi, el Tigre (In serv. 1965)

Q 16 PETREL

Q 15 CORMORAN Bldr: AFNE, Rio Santiago (In serv. 20-2-64)

D: 82 tons (102 fl) **S:** 11 kts **Dim:** $25.3 \times 5.0 \times 1.8$ **M:** 2 diesels; 2 props; 440 hp **Man:** 19 tot.

ICEBREAKER

♦ 1 antarctic support Bldr: Wärtsilä, Helsinki, Finland

Laid down L In serv. Q 5 Almirante Irizar 4-7-77 3-2-78 15-12-78



Almirante Irizar (Q 5) - red hull and stack, white superstructure Wärtsilä, 197

D: 11,811 (14,900 fl) **S**: 16.5 kts **Dim**: 119.3 × 25.0 × 9.5

A: 2/40-mm AA (1 × 2) Electric: 2,640 kw Man: 123 crew plus 100 scientists

Electron Equipt: Radar: 1 Plessey AWS-2, 2/navigational

M: Diesel-electric; 4 SEMT-Pielstick 8 PC 2.5 L/400 diesels; 2 Stromberg motors; 2 props; 16,200 hp

Remarks: Ordered 17-12-75. Canadian RAST helicopter downhaul winch system, 2 helicopters. Wärtsilä bubbler system to keep ice from hull bottom. Sixty-ton towing winch. Two 16-ton cranes. Used as a hospital ship during Falklands War. May be transferred to civil control.

AUXILIARY SHIPS

♦ 1 antarctic supply ship Bldr: Principe & Menghe SY, Maciel Isl.

Laid down L In serv. Q 6 Bahia Paraiso 27-2-79 3-7-80 11-12-81

D: 9,200 tons (fl) **S:** 18 kts **Dim:** 130.7 (120.0 pp) × 19.5 × 7.0 **A:** None **M:** 2 diesels; 2 CP props; 15,000 hp **Fuel:** 300 tons **Man:** 180 tot.



Bahia Paraiso — as a hospital ship during Falklands War Argentine Navy, 1982

AUXILIARY SHIPS (continued)

Remarks: To carry up to 82 passengers or 252 troops, 3,500m³ dry and 250m³ refrigerated stores, plus 1,200 tons cargo fuel. Two helicopters plus hangar. Icebreaking hull form. Used as hospital ship during Falklands War.

♦ 3 "Costa Sur"-class transports Bldr: Principe & Menghe SY, Maciel Isl.

| | Laid down | L | In serv. |
|----------------------|-----------|----------|----------|
| B 3 CANAL BEAGLE | 10-1-77 | 14-10-77 | 28-4-78 |
| B 4 BAHIA SAN BLAS | 11-4-77 | 29-4-78 | 27-11-78 |
| B 5 CABO DE HORNOS | 29-4-78 | 4-11-78 | 18-7-79 |
| (ex-Bahia Camarones) | | | |



Cabo de Hornos (B 5)

L. & L. Van Ginderen, 11-82

D: 7,640 tons (fl) **S:** 15 kts **Dim:** $119.9 \times 17.5 \times 6.4$ **A:** None **M:** 2 AFNE-Sulzer diesels; 2 props; 6,400 hp

Remarks: To supply remote stations. 4,600 grt/5,800 dwt. 9,700 cubic meters cargo. Also carry passengers and cargo in commercial service.

Note: The ex-U.S. Klickitat-class tanker Punta Delgada (B16, ex-Sugarland, ex-Nanticoke, AOG 66) was stricken in 1983. The replenishment oiler Punta Medanos (B18) was stricken 1984. The Argentine Navy employs the state-owned commercial tankers Puerto Rosales and Campo Duran for occasional underway replenishment duties.

♦ 1 coastal tanker Bldr: Puerto Belgrano SY

B 12 Punta Alta (In serv. 1938)



Punta Alta (B 12)

L. & L. Van Ginderen, 4-84

D: 1,900 tons (fl) S: 8 kts Dim: $64.0 \times 10.3 \times 3.8$ M: 1 set reciprocating steam; 1,850 hp Fuel: 146 tons Man: 40 tot.

Remarks: 800 dwt. Used primarily for harbor storage service at Puerto Belgrano.

◆ 1 lighthouse supply ship Bldr: Wheeler SB Co., Freeport, N.Y.

B 7 San Julian (ex-U.S. Army FS 281, L:1-45)

D: 900 tons (fl) **S:** 12 kts **Dim:** $53.49 (49.99 \text{ pp}) \times 9.75 \times 3.05$ **M:** 2 G.M. 6-278A diesels; 2 props; 1,000 hp **Fuel:** 57 tons **Range:** 4,300/9.5 **Man:** 30 tot.

Remarks: Purchased after WW II. Reported stricken early 1980s, but retained for lighthouse and navigational aid/buoy-lending services. Cargo: 595 m³.

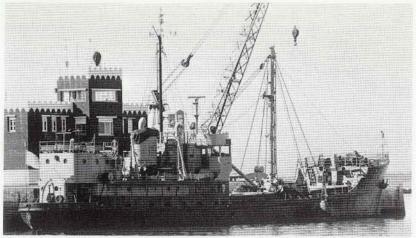
♦ 2 auxiliary ocean tugs Bldr: Ast. Vicente Forte, Buenos Aires

R 2 Querandi (In serv: 22-8-78) R 3 Tehuelche (In serv: 2-11-78)

D: 370 tons (fl) **S:** 12 kts **Dim:** $33.6 \times 8.4 \times 3.0$

M: 2 M.A.N. 6V 23.5/33 diesels; 1,200 hp Range: 1,200/12 Man: 30 tot.

Note: The ex-U.S. Sotoyomo-class auxiliary ocean tugs Chiriguano (A 7, ex-ATA 227) and Sanaviron (A 8, ex-ATA 228) were stricken in 1984 and 1985, respectively.



San Julian (B 7)

L. & L. Van Ginderen, 8-84



Querandi (R 2)

R. Scheina, 1980

♦ 1 training ship Bldr: Union Naval de la Levante, Valencia, Spain

Q 31 PILOTO ALSINA (ex-Ciudad de Formosa) (In serv. 1963)

D: 2,800 tons (fl) S: 14 kts Dim: 105.60 (99.98 pp) \times 17.89×2.52 M: 3 Maquinista-Burmeister & Wain 8-cyl. diesels: 1 prop; 4,800 hp Electric: 480 kw Fuel: 224 tons

Remarks: Former passenger/cargo ferry purchased and commissioned 17-3-81 for training duties. 3,986 grt/720 dwt.

♦ 1 sail-training vessel

Bld L In serv. Q 2 Libertad AFNE, Rio Santiago 30-5-56 1962



Libertad (Q 2)

J.-C. Bellonne, 9-84

AUXILIARY SHIPS (continued)

D: 3,025 tons (3,625 fl) S: 12 kts Dim: 94.25 (79.9 pp) × 13.75 × 6.75 M: Diesels; 2 props; 2,400 hp Range: 12,000 Man: 222 men and 140 cadets.

REMARKS: World's largest active sailing ship. Armament removed.

• 5 small sail-training yachts

Q 73 ITATI II Bldr: Cadenazzi SY, 1979 D: 80 tons (fl) S: 15 kts

Q 25 FORTUNA-I Bldr: Tandanor, Buenos Aires D: 17 tons Q 26 FORTUNA II Bldr: Tandanor, Buenos Aires D: 31.5 tons

Q 72 TEQUARA Q . . ADHARA

YARD AND SERVICE CRAFT

♦ 6 U.S. YTL-422-class small harbor tugs (1944-45)

R 5 Mocovi (ex-YTL 441)
R 10 Chulupi (ex-YTL 426)
R 18 Chiquillan (ex-YTL 444)
R 19 Morcoyan (ex-YTL 448)
R 19 Morcoyan (ex-YTL 448)

Bldrs: R 5, 16, 18: Robt. Jacobs, City Isl., NY; R 6, 19: H.C. Grebe Co; R 10: Everett Pacific BY, Everett, Wash.



Mocovi (R 5)

L. & L. Van Ginderen, 4-81

D: 70 tons (80 fl)
 S: 10 kts
 Dim: 20.16 × 5.18 × 2.44
 M: 1 Hoover-Owens-Rentschler diesel; 300 hp
 Electric: 40 kw
 Fuel: 7 tons
 Man: 5 tot.

Remarks: R 16, 18, 19 leased 3-65, others 3-69; purchased outright 16-6-77.

Nот
E: The Pehuenche-class harbor tugs Pehuenche (R 29) and
 Tonocote (R 30) were stricken 1984.

4 floating dry docks

Y 1 (ex-U.S.ARD 23): 3,500-ton capacity; 14.9 × 24.7 × 1.73 (light) (In serv. 1944)

Y 2: 1,500-ton capacity; 91.5 × 18.3 (In serv. 1913)

Y 3, Y 4: 750-ton capacity; 65.8 × 14

A: 12,000-ton capacity; 172.5 × 26 (In serv. 1958)

B: 2,800-ton capacity; 110.0 × 18.0 (In serv. 1956)

C: 1,000-ton capacity; 75.0×15.7

♦ 4 floating cranes

Note: The former sail training ship *Presidente Sarmiento* (1898) and the sail corvette *Uruguay* (1874) are maintained by the Navy as museums at Buenos Aires.

PREFECTURA NAVAL ARGENTINA (COAST GUARD)

Note: Ships and craft painted white. Attached aircraft include 2 Puma helicopters and several Short Skyvan transports. The *Prefectura Naval* was transferred from naval control to the Ministry of Defense in 10-84.

PATROL SHIPS AND BOATS

♦ 5 "Halcon"-class ocean patrol ships Bldr: Bazán, El Ferrol, Spain

| | Laid down | L | In serv. |
|------------------------------|-----------|----------|----------|
| GC 24 DOCTOR MANUEL MANTILLA | 16-2-81 | 29-6-81 | 15-5-82 |
| GC 25 Azopardo | 1-4-81 | 14-10-81 | 1-83 |
| GC 26 Thompson | 6-81 | 7-12-81 | 20-6-83 |
| GC 27 Prefecto Fique | 9-81 | 24-2-82 | 29-7-83 |
| GC 28 Prefecto Derbes | 11-81 | 16-6-82 | 16-11-83 |

D: 767 tons normal (900 fl) **S:** 21.5 kts **Dim:** 67.0 (63.0 pp) \times 10.0 \times 3.06

A: 1/40-mm AA Breda-Bofors — 1 Alouette-III helo

Electron Equipt: Radar: 1 Decca AC 1226 Electric: 710 kw

M: 2 Bazán-MTU 16V956 TB91 diesels; 2 props; 9,000 hp (7,500 sust.)

Range: 5,000/18 Man: 9 officers/24 men/4 cadets

Remarks: Ordered 3-79 to patrol 200-nautical-mile economic zone. Endurance 20 days.

Carry 144 rounds 40-mm. Same class built for Mexico. Helicopters, when aboard, would be on loan from Navy.



Doctor Manuel Mantilla (GC 24)

Bazán, 1982

♦ 1 former whaler, used for ocean patrol (In serv. 1958; purchased 1975) GC 13 Delein

D: 1,000 tons S: 15 kts Dim: 60.0 × 9.0 × 4.7 A: 1/40-mm AA M: Diesel; 2,300 hp Man: 32 tot.

♦ 1 Modified Dorado class Bldr: Puerto Belgrano Naval Base

GC 45 ROBALO (In serv. 1942)

D: 215 tons (fl) S: 12 kts Dim: 35.0 × 4.0 × 1.9 M: 2 G.M. diesels; 2 props; 900 hp Man: 10

♦ 2 Dorado class Bldr: Rio Santiago Navy Base

GC 34 Dorado (In serv. 1939) GC 43 Mandubi (In serv. 1940)

D: 208 tons (fl) S: 11 kts Dim: 33.2 × 4.0 × 1.9 M: 2 G.M. diesels; 2 props; 880 hp Man: 10

REMARKS: GC 34 used on pilot ship duties. Both possibly stricken.

PATROL CRAFT

GC 72 Buenos Aires

◆ 17 Z-28 class
 Bldr: Blohm + Voss, Hamburg (All in serv. 9-79/1-80)

GC 64 Mar Del Plata
GC 65 Martin Garcia
GC 66 Rio Lujan
GC 67 Rio Uruguay
GC 68 Rio Paraguay
GC 69 Rio Parana
GC 70 Rio Plata

GC 71 LA PLATA GC 81 CANAL DE BEAGLE



Buenos Aires (GC 72)

R. Scheina, 9-82

D: 81 tons (fl) **S:** 22 kts **Dim:** $27.65 (26.0) \times 5.30 \times 1.65$

A: 1/20-mm AA - 2/7.62-mm mg (I × 2)

M: 2 MTU 8V331 TC92 diesels; 2 props; 2,100 hp (1,770 sust.) Electric: 90 kVA Range: 780/18; 1,200/12 Man: 15-23 tot.

REMARKS: Ordered 24-11-78. Fin stabilizers fitted. During the Falklands War, Madryn (GC 78) and Rio Iguaza (GC 83) were lost, and Islas Malvinas (GC 82) was captured and renamed Tiger Bay by British forces. Not all units have the 20-mm gun.

♦ 3 Lynch-class Bldr: AFNE, Rio Santiago (In serv. 1964-67)

GC 21 LYNCH GC 22 TOLL GC 23 EREZCANO

D: 100 tons (117 fl) S: 22 kts Dim: 27.44 × 5.80 × 1.85

A: 1/20-mm AA M: 2 Maybach diesels; 2 props; 2,700 hp Man: 16 tot.

♦ 14 patrol craft Bldr: Cadenazzi SY, Tigre, 1978-79

GC 48 through GC 61

D: 13 tons S: 25 kts Dim: 12.54 × 3.57 × 1.1 A: 1 mg M: 2 G.M. diesels; 2 props; 560 hp

ARGENTINA (continued) PATROL CRAFT (continued)

• 1 tug Bldr: Sanym SA, San Fernando (In serv. 21-10-77)

GC 47 TONINA

D: 200 tons (fl) S: 11 kts Dim: 25.5 × 3.3 × 2.1 A: 1/20-mm AA
 M: 1 diesel; 500 hp Range: 3,400/10 Man: 11 tot.

- Approx. 28 smaller patrol craft for harbor duty: GC 88-94, GC 102, 103, 105-108, GC 110-114; ST 4; SB 2, 3; SI 2.
- ♦ 17 pilot boats no data available

 SP 14 Lago Alumine
 SP 20 Lago Viedma
 SP 26 Lago Musters

 SP 15 Lago Traful
 SP 21 Lago San Martin
 SP 27 Lago Quillen

 SP 16 Lago Colhue
 SP 22 Lago Buenos Aires
 SP 28 Lago Roca

 SP 17 Lago Mascardi
 SP 23 Lago Faviano
 SP 29 Lago Puelo

 SP 18 Lago Argentino
 SP 24 Lago Lacar
 SP 30 Lago Futalaufquen

SP 19 Lago Nahuel Huapi SP 25 Lago Cardiel



Lago Futalaufquen (SP 30) — a small pilot boat delivered from Antwerp in 2-83. No data available.

G. Gyssels

Remarks: Some (SP 19-21, 30) are of Dutch construction. Displacements run 20-30 tons (fl).

♦ 1 sail-training craft

Esperanza (L: 12-68) D: 32 tons

AUSTRALIA

Commonwealth of Australia

Personnel: (1-85): 16,062 total including about 1,000 women. Civilians operate many service craft. To drop to 15,536 by 1986.

Merchant Marine (1984): 622 ships - 2,172,850 grt (tankers: 22 - 586,694 grt)

Warships In Service Or Under Construction As Of 1 January 1986

| | L | Tons std. | Main armament |
|--|--------------------|----------------|---|
| • 6 submarines | | | |
| 6 Oberon | 1965-75 | 1,610 | 8/533-mm TT |
| ♦ 3 destroyers | | | |
| 3 Charles F. Adams | 1963-66 | 3,370 | 1 Tartar system, 2/127-mm, 2 Ikara |
| ♦ 9 (+2) frigates | | | |
| 4 (+2) OLIVER HAZARD PERRY 5 RIVER | 1978-82 1959-68 | 2,700 2,100 | 1 Tartar system, 1/76-mm 2/114-mm, Ikara, 1 Seacat |

- ♦ 20 patrol boats
- ♦ 1 (+2) minesweepers
- 1 amphibious warfare ship

Naval Aviation: After announcing the cancellation of plans to acquire a new carrier and striking the old *Melbourne* on 14-3-83, the new government announced the transfer of all naval fixed-wing aircraft assets to the R.A.A.F. by 30-6-84. Two HS-748 transports have been retained for EW training.

Helicopters in service include: 2 Mk 50A Sea King helicopters delivered in 1983, 6 Sea King Mk 50, 14 Wessex 31B helicopters, and 6 AS-350B Écureuil light helicopters. Three additional Wessex 31B helicopters are in storage.

The Sikorsky S-70B2 (U.S. Navy SH-60B LAMPS III-equivalent) was selected 10-84 for use on the FFG 7-class frigates; eight were ordered for delivery late 1987-late 1988, with M.E.L. "Super Searcher" radar in place of the U.S. LN-66. The Sea Kings are to be retired from 1989 onward. No. 816 Squadron was reestablished 1984 to operate the 14 Wessex helicopters retrieved from storage. The Ecureuils are for interim use on the FFG 7s. Six Bell UH-1B/Model 206B helicopters were retired 1984.



R.A.N. Sea King Mk 50 helicopter

R.A.N., 1984

In 1-83, the R.A.A.F. operated 10 P-3C and 11 P-3B Orion, with the P-3B to be replaced by 10 additional P-3C from 11-84 to 3-86. The first two P-3B were relinquished in 5-83; the last was returned to the U.S. in 10-85. The P-3Cs have AQS-901 receiver/processors to use the Australian-developed "Barra" sonobuoy.

Weapons and Systems: The Australian Navy uses U.S. equipment and systems on its U.S.-built warships and British weapons and systems on its other ships, but some of its air-search and fire-control radars have been purchased in The Netherlands (LW-02, M-20, etc.). Some 71 U.S. Mk 48 torpedoes have been purchased for use by submarines, with an additional batch ordered in 1980. U.S. Harpoon antiship missiles are to be carried by the submarines, FFG 7-class frigates, and R.A.A.F. P-3C, F-18, and F-111 aircraft.

Except for the U.S.-built ships, the sonars are of British or Australian (Mulloka) origin. Mulloka is a high-frequency set tailored to Australian coastal water-sound propagation conditions. The "Karrawarra" towed passive sonar array entered service in 1985. The "Winnin" countermeasures system with "Hoveroc" chaff/IR decoy rockets began trials in 1985; it will use the same Mk 137 6-tubed launcher as the U.S. Mk 36 SRBOC system, with the Winnin tubes added. The Australian Navy has perfected an unusual ASW weapon, the Ikara. Similar in basic concept to the French Malafon, it is a Mk 46 torpedo coupled with a guided missile and guidance equipment and has a maximum range of about 20,000 yards.

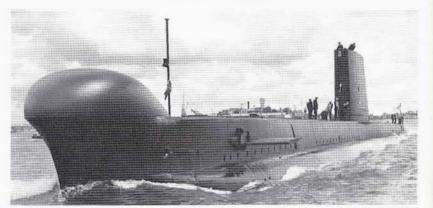
SUBMARINES

• 0 (+6) new construction - planned

Six replacement submarines for the Oberon class are planned for construction, with deliveries commencing in the mid-1990s. The first will be built abroad. The U.K. (Vickers Type 3000), West Germany, and Sweden were leading design contenders.

In 5-85 two competitors were selected for basic submarine design: the West German IKL 2000 and the Swedish Kockums Type 471. Competitors for systems engineering were reduced to U.S. Rockwell International and Singer Librascope, teamed with Australia's Computer Science and France's Thomson-CSF, versus H.S.A. of the Netherlands. Study contracts for the final design were to be let in 7-85 for six submarines, with an option for two more. The first is to be laid down late 1987/early 1988.

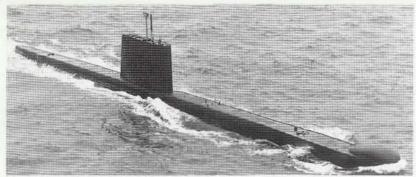
• 6 British Oberon-class Bldr: Scotts' SB & Eng., Greenock Laid down T. In serv. S 57 OXLEY 2-7-64 24-9-65 27-3-67 S 59 OTWAY 29-6-65 29-11-66 22-4-68 S 60 Onslow 26-5-67 29-8-68 22-12-69 S 61 ORION 6-10-72 16-9-74 15-6-77 S 62 OTAMA 28-5-73 3 - 12 - 7527-4-78 S 70 OVENS 17-6-66 5-12-67 18-4-69



Onslow (S 60)

R.A.N., 9-84

SUBMARINES (continued)



Ovens (S 70)

R.A.N., 3-84

D: 1,610/2,196/2,417 tons S: 17.5/15 kts

Dim: 89.9 (87.45 pp) × 8.07 × 5.48 Man: 6 officers, 57 men

A: 6/533-mm TT for Sub-Harpoon and U.S. Mk 48 Mod. 3 torpedoes (fwd) — 12 reloads

Electron Equipt: Radar: 1/1006 — Sonar: 1/187 C, 1/197, 1/2007, "Micro-Puffs"
 M: Two 3,680-hp Admiralty Standard Range 16 VVS-ASR1 diesel engines; diesel-electric propulsion; 6,000 hp

Remarks: Oxley recommissioned 22-2-80 with U.S. Singer/Librascope SFCS Mk 1 digital computer fire-control system with a UYK-20 computer, and a new sonar suit incorporating a Krupp/Atlas CSU-3-41 active/passive system (active transducer in sail, passive array in enlarged dome on bow), U.K. Type 2007 LF passive array, and Type 2004 sound velocity meter. The two short 533-mm torpedo tubes aft are no longer used. All are to receive Sub-Harpoon anti-ship missiles under the 1985-89 Defense Program, and U.S. Mk 48 Mod. 3 torpedoes have replaced all the Mk 37 type formerly carried. S 62 began trials with the "Karrawarra" towed linear passive hydrophone array in 1984, and S 59 received the first definitive version of this "clip-on" array in 4-85.

All six R.A.N. Oberons received the Oxley mid-life modernization: S 59 in 1-79 to 1981, S 70 from 3-80 to mid-1983, S 60 from 8-82 to 12-84, S 61 from 11-81 to 8-83, and S 62 from 1984 to 11-85. S 57 was to receive a long refit beginning in 1985 to bring her up to the definitive standard.

DESTROYERS

3 U.S. Charles F. Adams-class guided-missile destroyers
 SB, Bay City, Michigan

| | Laid down | L | In serv. |
|--------------------------------|-----------|---------|----------|
| D 38 PERTH (ex-U.S. DDG 25) | 21-9-62 | 26-9-63 | 17-7-65 |
| D 39 Hobart (ex-U.S. DDG 26) | 26-10-62 | 9-1-64 | 18-12-65 |
| D 41 Brisbane (ex-U.S. DDG 27) | 15-2-65 | 5-5-66 | 16-12-67 |



Brisbane (D 41)

LSPH W. McBride, R.A.N., 10-84



Hobart (D 39)

R. Gillett, 9-84

D: 3,370 tons (4,618 fl) S: 35 kts Dim: 134.18 (128.0 pp) \times 14.32 \times 6.0 A: 1/Mk 13 system for Harpoon SSM and Standard SM-1A SAM (40 missiles) — 2/127-mm DP Mk 42 (I \times 2) —2/Ikara ASW missile systems —6/324-mm ASW TT Mk 32 (III \times 2)

Electron Equipt: Radar: 1/978, 1/SPS-40C, 1/SPS-10F, 1/SPS-52B, 2/SPG-51C, 1/SPG-53A, 1/Ikara control Sonar: 1/SQS-23F — TACAN: 1/URN-20 EW: WLR-1F, WLR-6, URD-4 (UHFD/F)

M: 2 sets GT; 2 props; 70,000 hp Fuel: 900 tons

Boilers: 4 Babcock & Wilcox, 84 kg/cm²—superheat 520°C Electric: 2,200 kw Range: 1,600/30, 6,000/14 Man: 21 officers, 312 men

Remarks: D 38 modernized in the U.S. 3-9-74 to 2-1-75 with SM-1A Standard missiles, NTDS, and Mk 42, Mod. 10 guns. The other two were refitted to the same standard in Australia. All are scheduled to receive Harpoon anti-ship missiles. Missile fire control is Mk 74 Mod. 8 with two radar directors; guns are controlled by one Mk 68 radar director (optical range-finder removed). Further modernization began mid-1985, with D 41, to include substituting U.S. SLQ-32(V)2 EW gear and Mk 36 SRBOC decoy launchers; the gunfire control system is to be replaced by the U.S. Mk 86, and the missile system is to be updated.

FRIGATES

♦ 4 (+2) U.S. Oliver Hazard Perry-class guided-missile frigates

| Bldr | Laid down | L | In serv. |
|---------------|---|--|---|
| Todd, Seattle | 29-7-77 | 21-6-78 | 6-11-80 |
| Todd, Seattle | 1-3-78 | 1-12-78 | 21-3-81 |
| Todd, Seattle | 16-1-80 | 26-9-80 | 29-1-83 |
| Todd, Seattle | 2-7-81 | 26-3-82 | 21-7-84 |
| Williamstown | 12-7-85 | | 1991 |
| DY, Melbourne | | | |
| Williamstown | 1985 | | 1993 |
| DY, Melbourne | | | |
| | Todd, Seattle Todd, Seattle Todd, Seattle Todd, Seattle Williamstown DY, Melbourne Williamstown | Todd, Seattle 29-7-77 Todd, Seattle 1-3-78 Todd, Seattle 16-1-80 Todd, Seattle 2-7-81 Williamstown 12-7-85 DY, Melbourne Williamstown 1985 | Todd, Seattle 29-7-77 21-6-78 Todd, Seattle 1-3-78 1-12-78 Todd, Seattle 16-1-80 26-9-80 Todd, Seattle 2-7-81 26-3-82 Williamstown 12-7-85 DY, Melbourne Williamstown 1985 |



Adelaide (F 01)

LSPH E. Pitman, R.A.N., 7-85



Darwin (F 04) - note lengthened stern

Todd SB, 5-84



Sydney (F 03) - with Écureuil helo on deck

LSPH R. Berkhout, R.A.N., 3-84

D: 2,769 tons light (3,678 fl) — F 04: 2,851 tons (3,740 fl)
 Dim: 135.64 (125.9 wl) × 13.72 × 4.52 (7.47 max.) (F 04 and later: 138.80 o.a.)
 A: 1/Mk 13 Mod. 4 launcher for Standard SM-1A SAM and Harpoon (40 missiles) — 1/76-mm DP OTO Melara Compact (U.S. Mk 75) 1/20-mm Mk

FRIGATES (continued)

15 CIWS — 6/324-mm ASW TT Mk 32 for Mk 46 torpedoes (III \times 2) — 2 helicopters (see remarks)

Electron Equipt: Radar: 1/SPS-55, 1/SPS-49(V)2, 1/Mk 92, 1/SPG-60 STIR Sonar: 1/SQS-56 — EW: SLQ-32(V)2, Mk 36 SRBOC (VI \times 2) TACAN: URN-25

M: 2 G.E. LM 2500 gas turbines; 1 CP prop; 41,000 hp; 2/350-hp aux. propulsors Electric: 3,000 kw Fuel: 587 tons (plus 64 tons helo fuel)

Range: 4,200/20; 5,000/18 Man: 226 tot.

Remarks: First two ordered 27-2-76 in lieu of Australian DDL design. The third was ordered 23-1-79 and the fourth on 28-4-80. In 1980 two were authorized for construction in Australia, and it was announced that four more would be ordered later. The first two Australian built ships were ordered 12-10-83. Two drop-down, diesel-electric driven propellers are located forward beneath the hull for emergency propulsion and maneuvering. Crew larger than in U.S. sisters. (F 04 arrived Australia 25-10-85.

The selection of the Sikorsky S-70B2 helicopter for these ships will require that the first three be lengthened and have fin stabilization systems added at Garden Island Dockyard; F 01-F 04 will all require the RAST helicopter down-haul and traversing system to be added. During 1984-88 an Écureuil light liaison helicopter is being carried. The S-70B2 will be able to carry two anti-ship missiles (Penguin Mk 2 Mod. 7 or Sea Skua).

The Australian-built units will have Mulloka sonars in place of SQS-56, an Australian-developed towed-array sonar, the Winnan countermeasures system, with Hoveroc decoys, and, possibly, box-launcher-mounted Ikara ASW missiles. F 01 and 02 had their two Mk 24 target designators atop the pilothouse and EW systems added after delivery; their Mk 15 Vulcan-Phalanx Close-in Weapons Systems were ordered during 1984. All carry the SLQ-25 towed torpedo decoy.

Note: Four additional frigates are needed to replace the remaining "River"-class units. Originally, it had been intended that these would be additional Australian-built examples of the *Oliver Hazard Perry* class, but various possibilities remained under review during 1985.

♦ 5 "River"-class frigates

| | Bldr | Laid down | L | In serv. |
|------------------|------------------------|-----------|----------|----------|
| DE 46 PARRAMATTA | Cockatoo D. & Eng. Co. | 3-1-57 | 31-1-59 | 4-7-61 |
| DE 48 STUART | Cockatoo D. & Eng. Co. | 20-3-59 | 8-4-61 | 28-6-63 |
| DE 49 DERWENT | Williamstown Nav. DY | 18-8-65 | 16-12-67 | 20-1-70 |
| DE 50 SWAN | Williamstown Nav. DY | 18-8-65 | 16-12-67 | 20-1-70 |
| DE 53 Torrens | Cockatoo D. & Eng. Co. | 18-8-65 | 28-9-68 | 19-1-71 |



Stuart (DE 48) - as modernized

LSPH S. Given, R.A.N., 4-84



Parramatta (F 46) — with new stack, LW-02 radar antenna lowered, triple ASW TT, etc.

G. Gyssels, 12-82



Torrens (DE 53)

ABPH E. Pitman, R.A.N., 6-83



Swan (DE 50) - recess for Ikara on starboard side ABPH E. Pitman, R.A.N., 6-83

D: 2,100 tons (2,750 fl) S: 30 kts Dim: 112.75 (109.75 pp) × 12.5 × 3.9
A: 2/114-mm DP Mk 6(II × 1) — 1/Sea Cat/SAM syst. (IV × 1, 24 missiles) — 1/Ikara ASW missile launcher — 6/324-mm Mk 32 ASW TT (III × 2; not in DE 50, 53) — DE 50, 53 only: 1/Limbo Mk 10 ASW Mortar (III × 1)
Electron Equipt: Radar: 1/978, 1/LW-02, 1/WM 22, 1/Ikara control, DE 50,

53: 1/M 45 also
Sonar: 1/Mulloka, 1/162, 1/170 (DE 50 and DE 53 only)

Sonar: 1/Mulloka, 1/162, 1/170 (DE 50 and DE 53 only) EW: intercept arrays (not in DE 46)

M: 2 sets GT; 2 props; 34,000 hp Fuel: 400 tons Electric: 1,140 kw (DE 46: 1,500 kw) Man: 13 officers, 238 men Boilers: 2 Babcock & Wilcox, 38.7 kg/cm², 450°C Range: 4,500/12

Remarks: Sister Yarra (DE 45) was stricken 22-11-85. Improved versions of the British Rothesay class. Profiles of the DE 50 and DE 53 differ from those of other three, resembling more the British Leander class. DE 46, DE 48, and DE 49 give an extensive mid-life overhaul, receiving two triple Mk 32 ASW torpedo tubes in place of the Limbo mortar, Mulloka sonar in place of part of their original suits, H.S.A. M 22 gunfire-control systems with optronic back-up director, having their boilers converted to use diesel fuel, and having their accommodations improved; DE 46 completed 8-81, DE 48 on 29-7-83, and DE 49 began work in 7-81 for completion 12-85. DE 50 and DE 51 are now to receive only normal refits and will not be modernized; DE 50 is to become training ship in 1990. The Ikara missile carries a U.S. Mk 46 ASW torpedo as its payload. Variable-depth sonars have been removed, where fitted. Sea Cat has optical GWS 20 system in early units, HSA M4 radar director (M 45 radar) in DE 50, 53.

PATROL BOATS

Note: Tenders were let to 13 firms during 9-84 for design and ultimate construction of a "Pacific Patrol Boat" on behalf of Papua New Guinea, the Soloman Islands, Tonga, Vanuatu and Western Samoa.

♦ 15 Fremantle class Bldr: North Queensland Eng. and Agents, Cairns (P 203: Brooke Marine, Lowestoft)

| | L | In serv. | | L. | In serv. |
|-------------------|----------|----------|-----------------|----------|----------|
| P 203 FREMANTLE | 15-2-79 | 8-10-79 | P 211 Bendigo | 9-4-83 | 28-5-83 |
| P 204 Warrnambool | 25-10-80 | 14-3-81 | P 212 GAWLER | 9-7-83 | 30-8-83 |
| P 205 Townsville | 16-5-81 | 18-7-81 | P 213 GERALDTON | 22-10-83 | 10-12-83 |
| P 206 Wollongong | 17-10-81 | 28-11-81 | Р 214 Дивво | 21-1-84 | 10-3-84 |
| P 207 LAUNCETON | 23-1-82 | 1-3-82 | P 215 GEELONG | 14-4-84 | 2-6-84 |
| P 208 Whyalla | 22-5-82 | 3-7-82 | P 216 GLADSTONE | 28-7-84 | 8-9-84 |
| P 209 Ipswich | 25-9-82 | 13-11-82 | P 217 BUNBURY | 3-11-84 | 15-12-84 |
| P 210 Cessnock | 15-1-83 | 5-3-83 | | | |



Gladstone (P 216)

L. & L. Van Ginderen, 12-84

D: 200 tons (230 ft) **S:** 30 kts **Dim:** $42.0 \times 7.15 \times 1.8$ **A:** 1/40-mm AA — 1/81-mm mortar — 2/12.7-mm mg (II × 2)

Electron Equipt: Radar: 1/Kelvin-Hughes 1006

M: 2 MTU MD 16V538 TB91 diesels; 2 CP props; 7,200 hp — 1 Dorman 12JTM diesel; 1 prop; . . . hp for cruising

Range: 1,450/28; 4,800/8 Man: 3 officers/19 men

Remarks: Brooke Marine PCF-420 design. Ordered 9-77. Five more (Ballarat, Mildura, Armidale, Bundaberg, Pirie) authorized 1980, but canceled 1982. P 203 was built as pattern craft. The 40-mm AA was to be replaced with newer weapons, but will now be retained for reasons of economy. P 203: 26 tons overweight (246 fl), later reduced to 20

PATROL BOATS (continued)



Bunbury (P 217)

LSPH E. Pitman, R.A.N., 2-85

tons; all later units will be 10 tons over original 220-tons design fl. Addition of a lightweight SAM system, possibly the Swedish RBS-70, under study 1985. P 206 aground 6-85, later salved.

5 Attack-class coastal-patrol boats
 P 99, P 101: Walkers, Ltd.) —* Reserve crews

| | Laid down | L | In serv. |
|----------------|-----------|---------|----------|
| P 82 Adroit* | 8-67 | 3-2-68 | 17-8-68 |
| P 83 ADVANCE* | 3-67 | 16-8-67 | 24-1-68 |
| P 87 ARDENT | 10-67 | 27-4-68 | 26-10-68 |
| P 91 AWARE* | 7-67 | 7-10-67 | 21-6-68 |
| P 101 BAYONET* | 10-68 | 6-11-68 | 22-2-69 |



Advance (P 83) - used for reserve training

R. Gillett, 11-84

D: 146 tons (fl) S: 24 kts Dim: 32.76 (30.48 pp) × 6.2 × 1.9
 A: 1/40-mm Mk 7 AA — 2/7.62-mm machine guns Radar: 1/Decca RM 916
 M: 2 Davey-Paxman Ventura 16 YJCM diesels; 2 props; 3,500 hp (2,460 sust.)
 Range: 1,220/13 Man: 3 officers, 19 men

Remarks: Steel hull; light-alloy superstructure; air-conditioned. P 91 is unarmed. Sisters P 84 Aitape, P 92 Ladava, P 93 Lae, P 94 Madang, P 85 Samarai transferred to Papua New Guinea in 1974. P 86 Archer and P 95 Bandolier sold in 1973 to Indonesia and transferred in 1973 and 1974, respectively. P 88 Arrow sank 25-12-74 in Cyclone Tracey. Transferred to Indonesia were Barricade (P 98) on 22-4-82, Bombard (P 99) on 11-83, and Acute (P 81) on 6-5-83. Barbette (P 97) stricken 15-6-84, Buccaneer (P 100) stricken 27-7-84, Attack (P 90) stricken 21-2-85, for transfer to Indonesia 24-5-85; P 97 transferred to Indonesia 22-2-85, P 100 in 5-85, and P 90 in 1-86. Assail (P 89) stricken 18-10-85.

MINE WARFARE SHIPS

 0 (+2+4) "Bay"-class catamaran minehunters Bldr: Carrington Slipway, Tomago

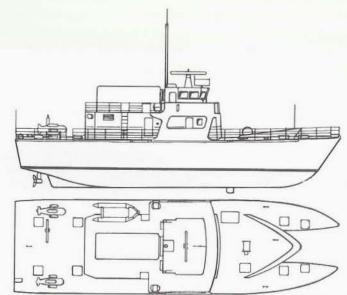
| | Laid down | L | In serv |
|---------------------|-----------|------|---------|
| MHCAT 01 RUSHCUTTER | 31-5-84 | 3-85 | 3-86 |
| MHCAT 02 SHOALWATER | 3-85 | | 11-86 |

D: 100 tons (170 fl) S: 10 kts Dim: 31.0 (28.0 wl) \times 9.0 \times 2.0 A: 2/12.7-mm mg (I \times 2) — 2/PAP-104 disposal vehicles

Electron Equipt: Radar: 1/Kelvin-Hughes Type 1006(4) Sonar: Krupp Atlas DSQS-11H

M: 2 SACM-Poyaud 325 hp diesels, electric drive; 2 Schöttel props; 180 hp Range: 1,200/10 Man: 2 officers, 12 men

Remarks: Ordered late 1981. Glass-reinforced plastic construction. If first pair successful, plan construction of four (originally to have been six) more, beginning in mid-1988, for delivery by mid-91. Sonar transducer beneath port hull. Sonar/mine-



MHCAT-minehunting catamaran

A.D. Baker III, 1-82

counter measures control room in dismountable deckhouse. Main engines drive propulsion generators and ships service generators.

♦ 1 British "Ton"-class coastal minehunter

D: 375 tons (445 fl) S: 15 kts Dim: 46.33 (42.68 pp) × 8.76 × 2.50

A: Removed Electron Equipt: Radar: 1/978—Sonar: 193

M: Napier Deltic 18A-7A diesels; 2 props; 3,000 hp Fuel: 45 tons

Range: 2,300/13; 3,500/8 Man: 3 officers, 35 men

Remarks: Bought in 1962 during refit 26-6-67 to 13-12-68 after refitting. Air-conditioned and stabilized. M 1121 equipped as minehunter, with type 193 sonar and four divers, only 1/40-mm AA. Proposal to replace these two survivors of a group of six ex-RN minesweepers with a new class of two oceangoing minehunters in the mid-1980s deferred for lack of funds. Sisters Snipe (M 1102) stricken 3-6-83, Ibis (M 1183) stricken 4-5-84. Curlew is due for disposal in 1986-87, and plans for acquiring further seagoing minehunters have been shelved.



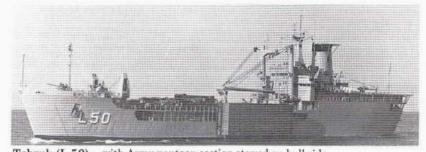
Curlew (M 1121)

R. Gillett, 11-84

AMPHIBIOUS WARFARE SHIPS

• 1 modified British Sir Bedivere class

Bldr Laid down L In serv.
L 50 Tobruk Carrington Skipways, Tomago 7-2-79 1-3-80 23-4-81



Tobruk (L 50) — with Army pontoon section stowed on hull side

ABPH E. Pitman, 9-83

AI

RE

BE



Tobruk (L 50) - showing stern ramp

L. & L. Van Ginderen, 2-83

D: 3,400 tons (6,000 fl) **S:** 17 kts **Dim:** 129.5 × 19.6 × 4.3

A: 2/40-mm AA (I × 2)

Electron Equipt: Radar: 1/Decca RM 916, 1/Decca 1226 M: 2 Mirrlees-Blackstone KDM8 diesels; 2 props; 9,600 hp Electric: 1,990 kw Man: approx. 18 officers, 50 men

Remarks: Announced 8-76 as a replacement for the *Sydney*. Can carry Wessex Mk 31B troop helicopters operating from platform amidships and aft, and can carry 300-500 troops, Leopard tanks, and other military vehicles. Bow and stern ramps fitted. Two LCVP carried. Can carry two LCM 8 on deck. Two 4.5-ton cranes fwd.; 60-ton heavy lift boom before bridge.

 6 Balikpapan-class utility landing craft ough
 Bldr: Walkers Ltd., Marybor-

L 126 BALIKPAPAN (L: 15-8-71) L 127 BRUNEI (L: 15-10-71) L 129 Tarakan (L: 16-3-72) L 130 Wewak (L: 18-5-72) L 133 Betano (L: 5-12-72)

L 127 Brunei (L: 15-10-71) L 128 Labuan (L: 29-12-71)

Betano (L 133)

L. & L. Van Ginderen, 9-84



Balikpapan (L 126)

2

L. & L. Van Ginderen, 9-84

D: 316 tons (503 fl)
 S: 10 kts
 Dim: 44.5 × 10.1 × 1.9
 A: 2/7.62-mm mg (I × 2)
 M: 2 G.M. 6-71 diesels; 2 props; 675 hp

Electron Equipt: Radar: 1/Decca RM 916 Range: 3,000/10 Man: 2 officers, 11 men Remarks: In service 1971-74. Salamaua (L 131) and Buna (L 132) were transferred to Papua New Guinea in 1974. Can carry three Leopard tanks. Originally Army-subordinated. L 127 and L 133 used in inshore survey work. L 128 is used for Reserve training. L 130 placed in storage ashore after decommissioning 16-8-85.

HYDROGRAPHIC SHIPS

♦ 1 Cook class

 Bldr
 Laid down
 L
 In serv.

 A 291 Соок
 Williamstown Nav. DY
 30-9-74
 27-8-77
 28-10-80



Cook (A 291)

LSPH E. Pitman, R.A.N., 3-85

D: 1,910 tons (2,550 ft) S: 17 kts Dim: 96.6 (91.2 pp) \times 13.41 \times 4.6 Electron Equipt: Radar: 1/Decca TM 829 — Sonar: 1/Simrad SU-2 M: 4 Caterpillar D398TA diesels; 2 props; 3,400 hp Fuel: 640 tons Range: 11,000/14 Man: 137 crew, 13 scientists

Remarks: Intended for oceanographic research and hydrographic survey. Carries one inshore survey launch. Survey equipment includes Decca Hi-Fix 6, Mini-Ranger MRS3, Atlas DESC-10 echo-sounder, and Harris narrow-beam echo-sounders. Unsatisfactory design not fully operational until mid-82.

♦ 1 Moresby class

Bldr Laid down L In serv.
A 573 Moresby State DY, Newcastle, NSW 1-7-62 7-9-63 6-3-64



Moresby (A 573)

ABPH E. Pitman, R.A.N., 1982

D: 1,714 tons (2,340 fl)
S: 19 kts
Dim: 95.7 (86.7 pp) × 12.8 × 4.6
Electron Equipt: Radar: 1/Decca TM 829 — Sonar: 1/Simrad SU-2
M: Diesel-electric propulsion: 3/1,330-hp diesels; 3 CSVM generator sets, each 1,330 kw/800 rpm; 2 electric motors, 2 props; 5,000 hp
Man: 13 officers, 133 men

Remarks: A small helicopter can be carried. Ship is air-conditioned. 2/40-mm AA removed, exhaust pipe added on foredeck, stack heightened 1973-74. Three inshore survey launches carried.

• 1 Flinders class

 Bldr
 Laid down
 L
 In serv.

 A 312 FLINDERS
 Williamstown Nav. DY
 11-6-71
 29-7-72
 27-4-73

D: 765 tons (fl) S: 13.5 kts Dim: $49.1 \times 10.05 \times 3.7$ Electron Equipt: Radar: Decca TM 829 — Sonar: Simrad SU-2 M: 2 Paxman Ventura diesels; 2 props; 1,680 hp Range: 5,000/9 Man: 4 officers, 34 men

Remarks: Similar to the Philippine ship Atyimba. Replaced the Paluma, stricken in 1974. Operates along Barrier Reef. Received new survey launch in 1982.

Note: The oceanographic research ship Kimbla (AGOR 314), a former net tender, was placed in storage 15-2-85. Planned replacement by civil Cape Pillar not pursued.

HYDROGRAPHIC SHIPS (continued)



Flinders (A 312)

R.A.N., 1980

♦ 0 (+4) inshore survey boats (In serv. 1987-88)

A. . . N. . . A. . . N. . . A. . . N. . .

D: 120 tons (fl) **S:** . . . **Dim:** $29.0 \times 6.0 \times 2.0$ M: Diesels; 2 props; . . . hp Range: 1,800/. . .

Man: 1 officer, 9 men

REMARKS: Programmed construction.

AUXILIARIES

♦ 0 (+1) modified French Durance-class replenishment oilers

Laid down Bldr In serv. Vickers, Cockatoo DY 3-3-84 1986 9-8-80 AOR 304. . . Success



Success (AOR 304) - at launch

LSPH P. Simpson, R.A.N., 3-84

D: 17,993 tons (fl) **S:** 18 kts **Dim:** 157.3 (149.0 pp) \times 21.2 \times 10.8 A: 3/40-mm AA (I × 3) -4/12.7-mm mg (I × 4) Fuel: 750 tons

Electronic Equipt: Radar: .

M: 2 SEMT-Pielstick 16 PC 2.5 diesels; 1 CP prop; 20,000 hp Electric: 5440 kw Range: 9,000/15 Man: 16 officers, 12 CPO, 22 PO, 127 men

Remarks: First unit ordered 9-79 from design prepared by DTCN, France. Second proposed 1980, but will not be built. To carry 8,220 tons distillate fuel, 1,131 tons aviation fuel, 170 tons munitions, 183 tons provisions, 259 tons water, and 45 tons of spare parts. Will carry 2 stores-handling land craft in davits and will be able to refuel three ships simultaneously. Helicopter platform. Construction progress slow and costs tripled. Scheduled to commence trials late 11-85.

Note: The replenishment oiler Supply (AO 195, ex-Tide Austral) was decommissioned for disposal 11-85.

1 destroyer tender

Bldr: Cockatoo D & E, Sydney

AD 215 STALWART

Laid down 6-64

I. In serv. 7-10-66

4-2-68



Stalwart (AD 215)

L. & L. Van Ginderen, 2-83

D: 10,000 tons (15,500 fl) S: 20 kts Dim: 157.12 (143.25 pp) \times 20.57 \times 9.0 A: 4/40-mm AA (II \times 2) Electric: 3,200 kw

Electron Equipt: Radar: 1/978, 1/293 Q

M: 2 Scott-Sulzer 6 cyl. Mk RD 68 diesels; 2 props, 14,400 hp

Range: 12,000/12 Man: 396 tot.

Remarks: Helicopter platform and hangar for two Wessex or one Sea King. Workshops and foundry (400 m²); boiler shop (100 m²); electric shop; electronic shop (300 m²); mechanical workshop (500 m²); and shops for precision equipment and plastic-boat repairs. Four 3-ton and two 6-ton cranes. Carries spare missiles for destroyers and frigates. Acts as R.A.N. Fleet Flagship.

♦ 1 training ship

Bldr Laid down In serv. 17-6-69 AGT 203 JERVIS BAY State DY, Newcastle 18-8-67 17-2-69 (ex-Australian Trader)



Jervis Bay (AGT 203)

L. & L. Van Ginderen, 10-84

D: 8,915 tons (fl) **S:** 17 kts **Dim:** 135.7 (123.5 pp) \times 21.5 \times 6.1

A: None Electron Equipt: Radar: 1/Decca RM916, 1/Kelvin-Hughes 1006

Fuel: 820 tons Electric: 2000 kw

M: 2 Crossley-Pielstick 16 PC 2V 400 diesels; 2 props; 13,000 hp

Man: 111 crew plus 40 trainees

Remarks: A former roll-on/roll-off cargo ferry converted to a training ship to replace the destroyer Duchess. Commissioned 25-8-77. Name commemorates a Royal Navy armed merchant cruiser of World War II. Can also serve as a transport and vehicle cargo ship. Operates with destroyer Vampire as a training squadron. U.S. WSC-3 SATCOMM gear added 1984.

1 modified Daring-class destroyer

Bldr Laid down In serv. 27-10-56 D 11 VAMPIRE Cockatoo D. & Eng. Co. 1-7-52 28-6-59



Vampire (D 11)

L. & L. Van Ginderen, 2-84

D: 2,800 tons (3,670 fl) S: 30 kts Dim: 118.87 (111.55 pp) \times 13.1 \times 5.1 A: 6/114-mm DP Mk 6 (II \times 3) — 2/40-mm AA (I \times 2) Electron Equipt: Radar: 1/LW-02, 1/8GR-301A, 2/HSA M22

EW: UA-8/9, FH-12

AUXILIARIES (continued)

M: Parsons GT; 2 props; 54,000 hp Boilers: 2 Foster-Wheeler Fuel: 584 tons Range: 3,700/20 Man: 321 tot.

REMARKS: Completed modernization in 1971 with Dutch fire-control and air-search radars. Refit commenced 3-81 for further service as a training ship; two twin 40-mm AA, Limbo ASW mortar, and sonars removed. Scheduled for retention until 1990, when she is to be replaced by the frigate Swan (DE 50).

2 general-purpose tenders

Bldr: Walkers, Ltd, Maryborough

| | Laid down | L | In serv. |
|--------------|-----------|----------|----------|
| AG 244 BANKS | 11-58 | 15-12-59 | 16-2-60 |
| AG 247 Bass | 11-58 | 26-3-60 | 15-11-60 |



Banks (AG 244)

R. Gillett, 2-83

D: 207 tons (255 fl) S: 10 kts Dim: 30.8 (27.5 pp) × 6.7 × 2.5 M: Diesels; 2 props; . . . hp Man: 2 officers, 12 men

REMARKS: AG 247 was originally equipped as a hydrographic ship and AG 244 for fisheries protection, but both were used primarily for reserve training until 1983. AG 247: 260 tons fl. AG 247 to Darwin 11-85 for reserve training.

 5 small training yachts tralia (In serv. 1984)

Bldr: Swarbrick Bros., Osbourne Park, West Aus-

3807 Alexander of Cresswell 3808 FRIENDSHIP OF LEEUWIN 3809 Lady Peryhyn of Nirimba

3810 CHARLOTTE OF CERBERUS 3811 Scarborough of Cerberus

D: 4.35 tons (fl) S: . . . Dim: 11.10 × 3.20 × 1.95 M: 1 Yanmar diesel; 22 hp Man: 8 to 10

Remarks: Many other small sailboats are also used for training.

Note: Four new 30-m training craft were proposed in 1978, but none have been ordered.

YARD AND SERVICE CRAFT

♦ 2 British "Ham"-class diving tenders, former inshore minesweepers Bldr: J. Samuel White, Cowes

DTV 1001 SEAL (ex-Wintringham) (L: 24-5-55) DTV 1002 Porpoise (ex-Neasham) (L: 14-3-55)



Seal (DTV 1001)

L. & L. Van Ginderen, 3-84

D: 120 tons (159 fl) S: 14 kts Dim: 32.43 (30.48 pp) \times 6.45 \times 1.75 M: 2 Paxman YHAXM diesels; 2 props; 1,100 hp Fuel: 15 tons Range: 2,000/9 Man: 7 crew + 14 divers

Remarks: Transferred in 1966, but not converted until 12-68 (Seal) and 1973. Assigned to the school of diving and underwater demolition in Sydney. Can support fourteen divers. Sister Popham (Y 299) sold 1974. Large deckhouse replaced sweep winch and

Bldr: Australian SB Industries, South Coogee, West Australia · 1 coastal tug

Laid down In serv. OT 2601 TAMMAR 20-4-83 10-3-84 15-3-84



Tammar (OT 2601)

LSPH S. Given, R.A.N., 3-84

D: 265 tons (300 fl) S: 11.5 kts Dim: 25.68 (23.63 pp) × 8.42 × 2.00 Electron Equipt: Radar: 1/Furuno navigational M: 2 G.M. 16 V149 TI diesels; . . . props; 2,560 hp Range: 1400/10 Man: 6 tot.

REMARKS: Ordered 30-3-83 for use at HMAS Sterling, Cockburn Sound. 160 grt. Bollard pull 40 tons.

 1 medium harbor tug OT 1801 QUOKKA (L: 10-83) Bldr: Shoreline Eng., Portland, Victoria



Quokka (OT 1801)

LSPH S. Given, R.A.N., 3-84

D: 110 tons (fl) S: 9 kts Dim: 18.17 (16.84 pp) × 5.91 × 2.55 Electron Equipt: Radar: 1/Furuno navigational M: 2 G.M. 8 V53 diesels; 633 hp

Remarks: Used at Cockburn Sound, West Australia. Bollard pull 8.5 tons

Bldr: Stannard Bros., Sydney (504: Perrin Eng., 3 501-class harbor tugs Brisbane)

HTS 501 Bronzewing (In serv. 12-68) HTS 502 Currawong (In serv. 1969) HTS 504 MOLLYMAWK (In serv. 1972)

D: 34 tons (47.5 fl) S: 9 kts Dim: 19.4 × 4.6 × . . M: 2 G.M. diesels; 2 props; 340 hp Range: 710/9.5 Man: 3 tot.

Remarks: Sister 503 to Papua New Guinea 1974. Civilian-manned. Named 1983.

YARD AND SERVICE CRAFT (continued)



Mollymawk (HTS 504)

R. Gillett, 8-82

♦ 2 wooden-hulled harbor tugs (In serv. 1946)

TB 9 SARDIUS AT 1536

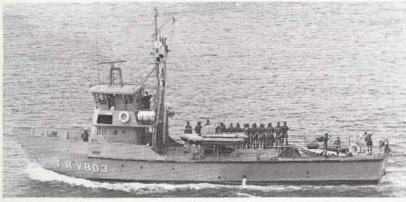
D: 60 tons (fl) S: 8 kts Dim: 13.7 × 4.6 × 2.0

M: 1 Hercules diesel; 240 hp Range: 500/8 Man: 4 tot.

REMARKS: TB 9 to be retained into 1990s; AT 1536 laid up 1983.

♦ 3 torpedo-recovery craft Bldr: Williamstown DY (In serv. 1970-71)

TRV 801 TAILOR TRV 802 TREVALLY TRV 803 TUNA



Tuna (TRV 803)

G. Gyssels, 11-82

D: 91.6 tons S: 13 kts Dim: 27.0 × 6.4 × 1.4

M: 3 G.M. 6-71 diesels; 3 props; 684 hp Range: 500/8 Man: 1 officer, 8 men

Remarks: TRV 802 previously used as a diving tender. All named 1982

Note: The torpedo recovery launch Bincleaves (TRB 586) was stricken in 1985.

♦ 1 Seaward Defense Boat general-purpose tender

Bldr In serv.
SDB 1325 E. Jack, Launceton, Tasmania 4-11-83



SDB 1325

LSPH S. Given, R.A.N., 2-83

D: 47 tons (58 fl) S: 12 kts Dim: 24.4 × 4.9 × 1.3
M: 2 Buda diesels; 2 props; 390 hp Range: 2,000/10 Man: 2 officers, 10 men
REMARKS: Last of 28 lengthened versions of the British "72-ft. HDML." Wooden hull.

Note: Water tender/cargo lighter/training ships Gayundah (MRL 253), MWL 254, and MWL 257 were stricken late in 1982; along with the General-Purpose Vessel GPV 958 and the tank-cleaning vessel TCV Colac.

♦ 4 liquid-cargo lighters Bldr: Williamston DY

WFL 8001 WARRIGAL (In serv. 10-84) WFL 8003 WOMBAT (In serv. 10-2-83) WFL 8002 WALLABY (In serv. 3-2-83) WFL 8004 WYULDA (In serv. 10-84)



Wallaby (WFL 8002)

R. Gillett, 1984

D: 265 tons light (1,206 fl) S: 9 kts Dim: $38.0 \times 10.2 \times 3.98$ M: 2 G.E.C. diesels; 1 Harbourmaster outdrive prop fwd., 1 aft; 564 hp Range: 100/9 Man: 5 tot.

Remarks: Cargo: 564 tons diesel fuel, 107 tons feedwater, 104 tons distilled water, 93 tons waste, and 73 tons ballast. Civilian manned. Replaced fuel oil barges OFL 1201-1204, 1207, 1208 in 1984. Known as WFL, Water Fuel Lighters.

♦ 3 stores lighters Bldr: Cockatoo DY, Sydney

CSL 01 WATTLE (In serv. 15-8-72) CSL 03 TELOPEA (In serv. 31-10-72) CSL 02 BORONIA (In serv. 25-9-72)



CSL 01—with 100-ton concrete ammunition barge CAL 10012, one of 6 sisters, alongside R. Gillett, 8-82

D: 145.1 tons (fl) S: 8 kts Dim: 23.7 × 9.75 × 2.0

M: 2 G.M. 671 diesels; 2 props; 600 hp Range: 320/8 Man: 4 (civil.)

Remarks: Catamarans. One 3-ton electric crane. Based on AWL 304 design, but with pilothouse aft.

◆ 1 aircraft lighter Bldr: Cockatoo DY, Sydney

AWL 304 (In serv. 16-1-67)

D: 175 tons (fl) S: 8.8 kts Dim: 23.7 × 9.75 × 2.0 M: 2 G.M. diesels; 2 props; . . . hp Man: 3 (civil.)

Remarks: Built 1967 to carry 2 Skyhawk or 1 Tracker to service the *Melbourne*. Similar to CSL 01 class, but with A-frame aft and low pilothouse forward, to port. Now used as a general stores lighter and cable layer.

♦ 2 Harbor Personnel Launches Bldr: Bertram, U.S.A. (In serv. 1966)

38101 38102

D: 12 tons (fl) S: 22 kts Dim: 11.5 × 3.9 × . . .

M: 2 G.M. 8V53M diesels; 2 props; 500 hp Range: 200/22 Man: 2 tot.

REMARKS: Originally purchased as air-sea rescue boats.

YARD AND SERVICE CRAFT (continued)

Bldr: North Queensland Engineers, Cairns ♦ 15 Navy workboats NWB 1280-1294 (In serv. 1980-81)



NWB 1282

L. & L. Van Ginderen, 2-82

D: 12.5 tons S: 12 kts Dim: 12.0 × . . . × . . . M: 2 diesels; 2 props; . . . hp

Remarks: Army operates 7 additional. Some (including NWB 1288) are configured as diving tenders. Aluminum construction.

◆ 38 wooden-hulled workboats (In serv. 1944-46)

AWB 404, 411, 413, 416-424, 426, 428, 430, 433-436, 440-442, 444, 445, 1658, 4001-4003, 4006, 4007, 4010, 4011



AWB 430

R. Gillett, 8-82

D: 10 tons light (22 fl) S: 8 kts Dim: 12.2 × 3.81 × 1.37 M: 1 Gray Marine 64 HN 9 diesel; 175 hp Range: 600/8

Remarks: Superstructures vary. Some have unofficial names (AWB 420, Amethyst).

Other self-propelled service craft include:

1 10.6-m Fast Motor Boat: FMB 3501

10 10.0-m Fast Utility Boats: FUB 3310-3319

1 7.9-m Fast Utility Boat: FUB 2603

7 10.0-m Harbor Personnel Boats: HPB 3350-3356 1 9.1-m Harbor Personnel Boat: HPB 30102

7 7.9-m Harbor Personnel Boat: HPB 2620-2626

1 7.6-m Harbor Personnel Boat: HPB 25101

20 Light Utility Boats in 3 types: LUB 20 . . . series 4 Firefish Radio Controlled Surface Targets: RCST 02-05 10 10.0-m Sea Boats: SB 3330-3339

2 Survey Motor Boats: SMB 3401 (Fantome), 3405

1 training yacht: Franklin

1 7.9-m workboat: WB 2601

Other non-self-propelled service craft include:

8 300-ton Concrete Ammunition Lighters: CAL 201-206, 208, 209

8 100-ton Concrete Ammunition Lighters: CAL 101, 102, 10010-10015

8 50-ton Concrete Ammunition Lighters: CAL 501-504, 508, 5010-5012

4 Container Pontoons: 1-4

1 Deperming Lighter: DGL 1

3 Dry Dock Caissons: DCI 1, 2; DC 219 21 60-ton Flat-Top Lighters: FTL 60101-60121

1 Flat Top Lighter: FTL 764

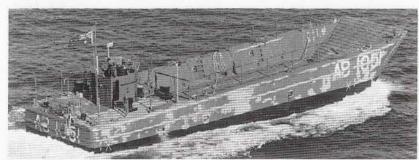
1 1,000-ton capacity Floating Dock: FD 1002

ROYAL AUSTRALIAN ARMY CORPS OF ENGINEERS

Personnel: Approx. 300

♦ 16 U.S. LCM (8)-class landing craft Bldrs: AB 1050-1061: North Queensland Engineers, Cairns; others: Dillingham SY, Fremantle (In serv. 1967)

AB 1050-1053, 1055, 1056, 1058-1067



AB 1051 - green-painted

L. & L. Van Ginderen, 9-84

D: 34 tons light (116 fl) S: 12 kts (9 loaded) Dim: 22.70 × 6.41 × 1.37 M: 2 G.M. 12V71 diesels; 2 props; 600 hp Range: 200/9

Remarks: Cargo: 55 tons. Some kept in land storage. Sister AB 1057 transferred to Tonga in 1982; AB 1054 stricken 1984. LCVPs 752, 755-757: stricken 1984. The Army plans to replace the LCMs with a larger type of utility landing craft.

• 2 harbor tugs (In serv. 1963)

AT 2700 JOE MANN AT 2701 THE LUKE



Joe Mann (AT 2700) - with an NLE (Naval Lighterage Equipment) pontoon R. Gillett, 8-82

D: 54.5 tons (60 fl) S: 10 kts Dim: 17.06 × 5.20 × 1.60 M: 2 G.M. 6-71 diesels; 1 prop; 333 hp Man: 3 tot.

Range: 5,700/8

REMARKS: AT 2700 based at Sydney, AT 2701 at Brisbane. AT 2701 has smaller pilothouse. Both fitted for firefighting.

♦ 2 NLE (Naval Lighterage Equipment) self-propelled pontoons

202 Pollux 201 Casper

D: 32.6 tons **S**: 4 kts **Dim**: $25.5 \times 6.4 \times$. . .

M: 2 portable diesel outdrives

AUSTRALIA (continued)

ROYAL AUSTRALIAN ARMY CORPS OF ENGINEERS (continued)

• 7 Navy workboats

Bldr: North Queensland Engineers, Cairns

AM 417-423 (In serv. 1979-80)



AM 417 - with portable cover over passenger deck

R. Gillett, 1984

Remarks: Data as for naval version. Crew: 2.

• 2 Sharkcat launches

Bldr: Shark Cat, Queensland

AM 216 (In serv. 1980) AM 215

Remarks: Glass-reinforced plastic, 60-knot, radar-equipped catamarans, for landing craft command and control. D: About 4 tons. Several sisters are operated by the RAAF Marine Section.

♦ 2 diving tender/survey craft (In serv. 1979)

AB 251 AFRICAN QUEEN

AB 252

Note: Also in service are over 70 U.S. Army-design LARC 5, 5-ton amphibious lighters and a variety of river-crossing craft and small assault boats.

AUSTRIA

Republic of Austria

AUSTRIAN ARMY DANUBE FLOTILLA

Personnel: 1 officer, 26 men

Merchant Marine (1984): 26 ships - 129,186 grt

* 2 patrol craft for the Danube

Bldr: Korneuberg Werft AG

Laid down

A 604 Niederösterreich 31-3-69 26-7-69 16-4-70



Niederösterreich (A 604)

D: 73 tons (fl) S: 22 kts Dim: 29.67 × 5.41 × 1.1

A: 1/20-mm AA - 2/12.7-mm mg - 2/7.62-mm mg - 1/84-mm mortar

M: 2 MWM V-16 diesels; 1,620 hp Fuel: 9.3 tons

Range: 900/. . . Man: 1 officer, 11 men

A 601 OBERST BRECHT Bldr: Korneuberg Werft AG (In serv. 14-1-58)

D: 10 tons S: 14 kts Dim: 12.30 × 2.51 × 0.75

A: 1/12.7-mm mg-1/84-mm mortar M: 2 Graf & Stift 6-cyl. diesels; 290 hp

Range: 160/10 Man: 5 tot.

10 U.S.-built M-3-class launches (4 M-3B in serv. 1965, 6 M-3D in serv. 1976)

D: 2.9-3.2 tons S: 18 kts Dim: 8.25 × 2.5 × 1.0 M: 2 G.M. gasoline/diesel engines; 176 hp Man: 3 tot.

several motorized pontoons

D: 8.5 to 40 tons fl Dim: 19.0 × 17.0 (some: 30.0) × 0.7



M-3D launch

1983

THE BAHAMAS

Commonwealth of the Bahamas

MERCHANT MARINE (1984): 103 ships - 3,191,971 grt (tankers: 37-2,732,335 grt)

POLICE MARINE DIVISION

♦ 0 (+3) "Protector" class

Bldr: Fairey Marine, Cowes, U.K.

P 04 N. . . (In serv. 6-86)

P 04 N. . . (In serv. 8-86)



Protector class

Fairey Marine, 1984

D: 100 tons (fl) S: 30 kts Dim: 33.00 (28.96 wl) × 6.73 × 1.95 (props) A: 1/20-mm AA — 2/7.62 mm mg Electron Equipt: Radar: 1/Furuno FR-701 M: 3 G.M. Detroit Diesel 16 V149 TIB diesels; 3 props; 5,400 hp Range: 300/24; 600/14 Man: 17 crew + 8 spare Fuel: 16 tons

Remarks: Ordered 1985 for delivery spring 1986 to end-1986. Steel construction.

♦ 1 103-foot patrol boat

Bldr: Vosper Thornycroft

P 01 MARLIN

Laid down 22-11-76

L 20-6-77

23-5-78



Marlin (P 01)

Vosper, 1978

THE BAHAMAS (continued) POLICE MARINE DIVISION (continued)

D: 100 tons (125 fl) S: 24 kts Dim: 31.5 × 5.9 × 1.6

A: 1/20-mm AA M: 2 Paxman Ventura diesels; 2 props; 2,900 hp

Range: 2,000/13 Man: 3 officers, 16 men

Remarks: Fin stabilizers, steel hulls. Two 50-mm flare launchers. Sister Flamingo sunk 11-5-80 by Cuban MiG-21 aircraft.

• 5 Keith Nelson patrol craft 5-3-71, last three 10-12-77

Bldr: Vosper-Thornycroft. First four in serv.

P 22 Andros

P 25 EXUMA

P 27 INAGUA

P 23 ELEUTHERA

P 26 ABACO

D: 30 tons (37 fl) S: 19.5 kts Dim: 18.29 (17.07 pp) × 5.03 × 1.53 A: 2/7.62-mm mg (I × 2) Electron Equipt: Radar: 1/Decca 110

M: 2 Caterpillar 3408 TA diesels; 2 props; 950 hp

Fuel: 4 tons Electric: 29 kVA Range: 650/16 Man: 11 tot.

Remarks: Fiberglass construction, air-conditioned. First unit, Acklins (P 21) destroyed by fire, 1980. San Salvador (P 24) stricken 1982.

4 small patrol craft

Bldr: Phoenix Marine, Florida, U.S.A.

P 30, P 31 (In serv. 6-81)

P 32, P 33 (In serv. 12-81)

D: 8 tons (fl) S: 24 kts Dim: 8.8 × 3.0 × 0.7

A: 2/7.62-mm mg (I × 2) Range: 350/21

M: 2 Volvo TAMD 40 diesel outdrives; . . . hp Man: 4 tot.

Remarks: Glass-reinforced plastic construction.

♦ 1 support craft, former fishing boat (Purchased 21-10-81)

AO 2 FORT CHARLOTTE (ex-. . .)

D: 150 tons (fl) S: 12 kts Dim: 45.1 × 6.1 × 2.1

A: 2/7.62-mm mg (I × 2) Range: 3,500/12

M: 1 G.M. Detroit Diesel 16-71 diesel; 1 prop; 800 hp Man: 16 tot.

Remarks: Used for constabulary transport and supply.

◆ 1 support craft, former fishing boat (Purchased 6-8-80)

AO 1 FORT MONTAGUE (ex-. . .)

D: 90 tons (fl) S: 10 kts Dim: 28.6 × 7.0 × 1.8

A: 2/7.62-mm mg (I × 2) Range: 3,000/10

M: 1 G.M. 12-71 diesel; 1 prop; . . . hp Man: 16 tot.

Note: 1 Fairey "Spear" patrol craft reported delivered 1985.

BAHRAIN

MERCHANT MARINE (1984): 72 ships - 44,470 grt (tankers: 5 - 2,896 grt)

DEFENSE FORCES

Personnel (1984): 300

CORVETTES

Bldr: Lürssen, Vegesack, West Germany ♦ 0 (+2) Type 62-001

Laid down

In serv.

I. 1985

. . . N. . .

D: Approx. 600 tons (f1) S: 30+ kts Dim: 62.95 × 9.30 × . . .

A: 4/MM 40 Exocet SSM-1/76-mm OTO Melara Compact DP-2/40-mm AA $(II \times 1) - 2/20$ -mm AA $(I \times 2) - 1/.$. . helicopter

Electron Equipt: Radar: . . . — EW: . . .

M: . . . diesels; 2 props; . . . hp Range: 4,000/. . .

Remarks: Contract announced 5-85. The raised helicopter pad incorporates an elevator to lower the helicopter to a hangar below. Eight air-to-surface missiles for the helicopter are to be carried. See drawing in addenda.

PATROL BOATS

Bldr: Lürssen, Vegesack, West ♦ 2 (+2) TNC 45-class guided-missile boats Germany

20 Ahmed Al Fateh (In serv. 5-2-84) 21 Al Jaberi (In serv. 5-84)

D: 203 tons light (259 fl) S: 40.5 kts

Dim: 44.9 (42.3 fl) × 7.3 × 2.05 (2.31 props)

A: 4/MM 40 Exocet SSM (II × 2) - 1/76-mm OTO Melara DP - 2/40-mm Breda AA (II \times 1) - 2/12.7-mm M3 mg (I \times 2)



Ahmed al Fateh (20)

P. Voss. 28-8-83

Electron Equipt: Radar: 1/Decca. . . nav.; 1/. . . search radar; 1/PEAB 9 LV223 f.c.s.

EW: Decca RDL-2 ABC passive warning, 1/Dagaie chaff RL $(X \times 1)$

M: 4 MTU 16V538 TB92 diesels; 4 props; 15,600 hp (13,460 sust.) Electric: 405 kVA Range: 500/38.5; 1,500/16 Man: 6 officers, 30 men

Remarks: Ordered 1979; very similar to TNC 45 class for the United Arab Emirates. Panda backup director for 40-mm guns. Carry 250 rds 76-mm, 1,800 rds. 40-mm, 6,000 rds. 12.7-mm ammunition. Two additional ordered 1985. Fuel: 45 tons.

♦ 2 FPB 38-class patrol boats

10 AL RIFFA

30 AL JASRAH

Bldr: Lürssen, Vegesack

4-81

In serv. 3-3-82

11 HAWAR

L 3-3-82



Al Riffa (10) and Hawar (11)

L. & L. Van Ginderen, 8-81

D: 188 tons normal (205 fl) S: 34 kts Dim: 38.5 (36.0 pp) × 7.0 × 2.2 (props)

A: 2/40-mm AA Breda AA (II × 1) -2/mine rails Electron Equipt: Radar: 1/Decca . . . nav.; 1/9GR 600 Electric: 130 kVA

M: 2 MTU diesels; 2 props; 9,000 hp Range: 550/31.5; 1,100/16 Man: 3 officers, 24 men

Remarks: Ordered 1979. 2/3-pdr. saluting cannon. CSEE Lynx optical GFCS. 57-mm flare rocket/chaff launcher abaft mast.

♦ 2 65-ft Commercial Cruiser class U.S.A. (In serv. 4-82)

31 AL JARIM

Bldr: Swiftships, Morgan City, LA,



Al Jarim (31) with Al Jasrah (30)

Swiftships, Inc., 4-82

BAHRAIN (continued) PATROL BOATS (continued)

D: 33 tons (fl) S: 30 kts Dim: 19.17 × 5.56 × 1.98 A: 1/12.7-mm mg Electron Equipt: Radar: 1/Decca 110 M: 2 G.M. 12V71 TI diesels; 2 props; 1,200 hp Range: 1,200/18

REMARKS: Aluminum construction.

MINISTRY OF THE INTERIOR COAST GUARD

PATROL BOATS AND CRAFT

♦ 1 30-meter Wasp class Bldr: Souter, Cowes, U.K.

N. . . (In serv. 8-85)



30-meter Wasp for Bahrain

Souter, 1985

D: 10.5 tons (fl) S: 23.6 kts Dim: 30.0 (26.75 wl) × 6.40 × 1.60 A: 1/20-mm AA, 1/7.62-mm mg

M: 2 G.M. 16V149 TI diesels; 2 props; 3,100 hp Fuel: 17 tons Electric: 47 kVA Range: 500/22; 1,000/12 Man: 16 tot.

Remarks: Enlarged version of standard 20-m Wasp, ordered 3-8-84. Glass-reinforced plastic construction. A VIP lounge is built over the stern. Outfitted as a yacht.

2 20-meter Wasp class fiberglass-hulled 1-83; in serv. 1983)
Bldr: Souter, Cowes, U.K. (Ord.

Bahrain 4 Bahrain 5

D: 34 tons (fl) S: 21 kts Dim: 20.0 (16.0 wl) \times 5.0 \times 1.5 A: 2/7.62-mm mg (I \times 2)

M: 2 G.M. 12V71 TI diesels; 2 props; 1,200 hp Man: 8 tot.

3 11-Meter Wasp class fiberglass-hulled
 20-8-82; in serv. 1983)
 Bldr: Souter, Cowes, U.K. (Ord.

SAHEM 1 SAHEM 2 SAHEM 3

D: 7.25 tons (fl) S: 24 kts Dim: $11.0 \times 3.2 \times 0.56$ A: 1/7.62-mm mg M: 2 Perkins TV8.450 diesels; 2 waterjets; 612 hp

♦ 4 Sword class fiberglass-hulled Bldr: Fairey Marine, Cowes, U.K.

Saif 1 Saif 2 Saif 3 Saif 4 (In serv. 1980)

D: 15.2 tons
 S: 28 kts
 Dim: 13.7 × 4.1 × 1.32
 M: 2 G.M. 8V71 TI diesels; 2 props; 850 hp
 Range: 500/. . . Man: 6 tot.

♦ 3 patrol craft Bldr: Vosper, Singapore (In serv. 1977)

AL BAYNEH JUNNAN QUAIMAS

D: 6.3 tons (fl) **S:** 27 kts **Dim:** 11.1 × 3.3 × 0.9 **M:** 1 Sabre diesel; 210 hp

♦ 3 Tracker-class Bldr: Fairey Maine, U.K.

Bahrain 1 (In serv. 1975) Bahrain 2 (In serv. 1980) Bahrain 3 (In serv. 1980)

D: 26 tons (fl) S: 28 kts Dim: 19.6 × 4.9 × 1.5 A: 1/20-mm AA M: 2 G.M. diesels; 2 props; 1,120 hp Range: 500

♦ 2 Spear-class fiberglass-hulled Bldr: Fairey Marine, U.K. (In serv. 1975)

SAHEM 4 5 KHATAF

D: 4.5 tons (10 fl) S: 26 kts Dim: 9.1 × 2.75 × 0.84 A: 2/7.62-mm mg M: 2 Perkins diesels; 2 props; 290 hp Range: 220/26 Man: 3 tot.

• 3 27-foot Bldr: Cheverton, Cowes, U.K. (In serv. 1977)

15 Noon 16 Askar 17 Suwad

D: 3.3 tons **S:** 15 kts **Dim:** $8.23 \times 2.44 \times 0.81$ **M:** 2 diesels; 1 prop; 150 hp

1 50-foot Bldr: Cheverton, Cowes, U.K. (In serv. 1976)

6 Mashtan

D: 9 tons S: 22 kts Dim: 15.2 × 4.3 × 1.4 M: 2 G.M. 8V TI diesels; 2 props; 900 hp Range: 660/12 1 utility landing craft serv. 15-11-82) Bldr: Swiftships, Inc., Morgan City, Louisiana (In

AJIRAH



Ajirah

Swiftships, 11-82

D: 428 tons (fl) S: 12 kts Dim: 39.62 × 10.97 × 1.30 A: None Electron Equipt: Radar: 1/Decca . . . nav. M: 2 G.M. Detroit Diesel 16V71N diesels; 2 props; . . . hp Fuel: 20 tons Range: 1,500/10 Man: 2 officers, 6 men

REMARKS: Aluminum construction. Cargo: vehicles, supplies, up to 100 tons cargo fuel and 88 tons water. Bow ramp. 15-ton crane. Turning radius: 77 m. Two sisters in Venezuelan Navy.

MISCELLANEOUS

♦ 1 Loadmaster II-class landing craft serv. 1981)
Bldr: Fairey Marine, Cowes, U.K. (In

40 Safra II

D: 150 tons (fl) S: 8 kts Dim: 22.5 × 7.5 × 1.2 M: 2 G.M. 8V92N diesels; 2 props; 776 hp Range: 500/. . . Man: 6 tot.

 1 Loadmaster-class landing craft 1976)
 Bldr: Cheverton, Cowes, U.K. (In serv.

7 SAFRA I

D: 90 tons (fl) S: 10 kts Dim: 18.23 × 6.1 × 1.0 M: 2 diesels; 2 props; 240 hp Range: 600/9 Man: 13 tot.

Remarks: Can carry 40 tons of vehicles or dry cargo, or 60 tons of liquid cargo.

- 10 wooden motor dhows for logistics and patrol duties
- ◆ 1 utility hovercraft Bldr: Tropimere, U.K. (In serv. 1977)

 D: 4.23 tons (fl) S: 45 kts Dim: 8.9 × 4.5 × 3.6 high
- 1 tug (In serv. 1981)

N.

D: 12 tons (fl) S: . . . kts Dim: 11.0 × . . . × . . . M: 1 G.M. 6V71 diesel; 300 hp

BANGLADESH

People's Republic of Bangladesh

Personnel (1985): 7,500 men (600 officers)

Merchant Marine (1984): 248 ships - 366,858 grt (tankers: 43 - 50,643 grt)

Note: Reports that Bangladesh had received a Chinese-built Romeo-class submarine and that five more are on order are the result of confusion over translation errors made on press reports of the arrival of the submarine chaser *Durjoy*.

FRIGATES

• 2 British Leopard-class (Type 41) frigates

| | Bldr | Laid down | L | In serv. |
|------------------------------------|--------------------------|-----------|---------|----------|
| F 15 ABU BAKR (ex-Lynx, f 27) | John Brown, Clydebank | 13-8-53 | 12-1-55 | 14-3-57 |
| F 17 ALI HAIDER (exJaguar, F37) | Wm. Denny, Dumbarton | 2-11-53 | 30-7-57 | 12-12-59 |

FRIGATES (continued)



Abu Bakr (F 15)

1982

D: 2,300 tons (2,520 fl) S: 23 kts Dim: 103.63 (100.58 pp) × 12.19 × 4.8 (fl)

A: 4/114-mm Mk 6 DP (II × 2) -1/40-mm Mk 9 AA

Electron Equipt: Radar: 1/965, 1/978, 1/993, 1/275 fire-control

M: 8 Admiralty 16 VVS ASR 1 diesels; 2 CP props; 12,400 hp

Electric: 1,500 kw Fuel: 230 tons

Range: 2,300/23; 7,500/16 Man: 10 officers, 200 men

Remarks: F 17 purchased 6-7-78; arrived Bangladesh 11-78 after overhaul. F 15 purchased 12-3-82, commissioned 19-3-82. Squid ASW mortar and sonars removed while in Royal Navy. Fin stabilizers. 1/Mk 6 GFCS with Type 275 radar for 114-mm guns; 40-mm, local control only.

♦ 1 ex-British Salisbury-class (Type 61) aircraft direction frigate

Bldr Laid down L In serv.
F 16 UMAR FAROOQ Hawthorn Leslie 27-8-53 30-11-55 11-4-58
(ex-Llandaff, F 61)



Umar Farooq (F 16)

1979

D: 2,170 tons (2,408 fl) S: 24 kts Dim: 103.6 (100.58 pp) \times 12.19 \times 4.8 A: 2/114-mm Mk 6 Dp (II \times 1) - 2/40-mm Mk 5AA (II \times 1) - 1/Mk 4 Squid ASW mortar (III \times 1)

Electron Equipt: Radar: 1/985, 1/993, 1/277Q, 1/982, 1/975, 1/275 Sonar: 1/174, 1/170B

M: 8 Admiralty 16 VVS ASR 1 diesels; 2 props; 12,400 hp Range: 2,300/24; 7,500/16 Man: 14 officers, 223 men

Remarks: Transferred 10-12-76. Mk 6 GFCS for 114-mm mount.

PATROL BOATS AND CRAFT

♦ 4 Chinese Hoku-class guided-missile patrol boats

P 8111 DURANTA P 8112 DURBAR P 8113 DURUEDYA P 8114 DURDAM

D: 68 tons (79 fl) **S:** 38 kts **Dim:** 27.0 × 6.3 × 1.8 (1.3 hull)

A: $2 \text{ CSS-N-1 SSM } (I \times 2) - 2/25 \text{-mm AA } (II \times 1)$

Electron Equipt: Radar: 1/Square Tie Electric: 65 Kw

M: 4 M-50F-4 diesels; 4 props; 4,800 hp Range: 520/26 Man: 17 tot.

Remarks: First two delivered 6-4-83; others in 10-83. Steel construction. Have 5-day endurance.

 2 fisheries protection patrol boats pore
 Bldr: Vosper Pty, Tanjong Rhu, Singa-

P 316 Megna (L: 19-1-84) P 317 Jamuna (L: 19-3-84)



Megna (P 316) - fitting out

1984

D: 410 (fl) S: 20 kts Dim: 46.5 × 7.5 × 2.0 (hull)
A: 2/7.62-mm mg (I × 2) Range: 2,000/16 Man: 44

Electron Equipt: Radar: 1/Decca 1229

M: 2 Paxman Valenta 12 CM diesels; 2 props; 6,000 hp

Remarks: Operated for the Ministry of Agriculture by the Navy for 200-nautical-mile economic zone patrol.

◆ 4 (+ 2) Chinese Hainan-class submarine chasers

P 801 Durjoy (In serv. 10-9-82) P 804 N. . . (In serv. 8-84)

P 802 N. . . (In serv. 8-84)

P 805 N. . .

P 803 N. . . (In serv. 8-84)

P 806 N. .

D: 375 tons normal (400 fl) **S:** 30.5 kts **Dim:** $58.77 \times 7.20 \times 2.20$ (hull) **A:** 4/57-mm AA (II \times 2) -4/25-mm AA (II \times 2) -4/RBU-1200 ASWRL

 $(V \times 4) - 2/BMB-2$ d.c. mortars -2/d.c. racks — mines

Electron Equipt: Radar: 1/Pot Head - Sonar: 1/Tamir-11

M: 4 diesels; 4 props; 8,800 hp Man: 70 tot.

Remarks: Delivery date for last two uncertain.

• 4 Soviet P-4-class torpedo boats (In serv. mid-1950s)

T 8221 T 8222 T 8223 T 8224

D: 19.3 tons (22.4 fl) S: 55 kts Dim: 19.3 × 3.7 × 1.0 A: 2/14.5-mm mg (II × 1) — 2/450-mm TT Man: 12 tot.

Electron Equipt: Radar: 1/Skin Head M: 2 M50 diesels; 2 props; 2,400 hp

Remarks: Delivered from China 6-4-83 along with the two Hoku-class missile boats. Aluminum construction. Thoroughly obsolescent.

1 Japanese-built patrol boat

Bldr L In serv.
Shamjala Sumidagawa, Tokyo 2-7-81 1982

D: 160 tons (fl) S: 26.5 kts Dim: 30.0 × . . . × . . . A: . . . M: 2 diesels; 2 props; . . .hp

Remarks: Apparently a variant of the Japanese Maritime Safety Agency's Akagi (130ton) class. Six patrol boats of this size were planned, but further orders did not materialize.

♦ 2 ex-Yugoslav Kraljevica-class patrol boats

P 301 Karnaphuli (ex-Yugoslav PBR 502) P 302 Tistna (ex-Yugoslav PBR 505)



Tistna (P 302)

1976

D: 190 tons (202 fl) **S:** 18 kts **Dim:** $41.0 \times 6.3 \times 2.2$

A: 2/40-mm AA (I × 2) — 4/20-mm AA (I × 4) — 2/Mk 6 d.c. throwers — 2/d.c. racks — 2/128-mm RL (V × 2)

Electron Equipt: Radar: 1/Decca 45-Sonar: QCU-2 Range: 1,000/12

M: 2 M.A.N. W8V 30/38 diesels; 2 props; 3,300 hp

Man: 4 officers, 40 men

Remarks: Transferred 6-6-75.

♦ 8 Chinese Shanghai-II-class patrol boats

 101 Shaheed Daulat
 105 Towheed

 102 Shaheed Farid
 106 Towfiq

 103 Shaheed Mohibullah
 107 Tamjeed

 104 Shaheed Akhtaruddin
 108 Tanveer



Shaheed Farid (102) and sister

BANGLADESH (continued)

D: 122 tons (135 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55 (max.) A: 4/37-mm AA (II × 2) - 4/25-mm AA (II × 2) Man: 36 tot.

Electron Equipt: Radar: 1/Pot Head Electric: 39 kw

M: 2 M50F-4/1,200-hp and 2/910-hp diesels; 4 props; 4,220 hp Range: 750/16.5

Remarks: 101-104 delivered 6-7-80. 105-108 delivered 5-82. Two earlier units, delivered 1974, now stricken.

 1 salvaged Pakistani patrol boat Bldr: Brooke Marine, Lowestoft, U.K.

P 201 BISHKALI (ex-Jessore) — In serv. 20-5-65

D: 115 tons (143 fl) S: 24 kts Dim: 32.62 (30.48 pp) × 6.10 × 1.55 Man: 30 A: 2/40-mm AA (I × 2) M: 2 MTU 12V538 diesels; 2 props; 3,400 hp

Remarks: Sunk in 1971 War of Independence; salvaged and repaired, Khulna SY; recommissioned 23-11-78.

 2 Ajay-class patrol boats Bldr: Hooghly D & E, Calcutta (In serv. 1-62)

P 201 Padma (ex-Akshay, P 3136) P 202 Surma (ex-Ajay, P 3135)

D: 120 tons (151 fl) **S**: 18 kts **Dim**: 35.75 (33.52 pp) \times 6.1 \times 1.9

A: 8/20-mm AA (IV × 2)

M: 2 Paxman YHAXM diesels; 2 props; 1,000 hp-1 Foden FD-6 cruise diesel; 100 hp Range: 500/12; 1,000/8 Man: 3 officers, 32 men

REMARKS: Indian version of British "Ford" class, donated and commissioned 12-4-73 and 26-7-74, respectively. Recently rearmed with Yugoslav weapons.

• 5 river patrol boats Bldr: DEW Narayengonj, Dacca

P 101 PARNA (6-72) P 103 PATUAKHALI (11-74) P 105 RANGAMATI (6-77)

P 102 Noakahli (7-72) P 104 Bogra (6-77)

D: 69.5 tons (fl) S: 10 kts Dim: 22.9 × 6.1 × 1.9 A: 1/40-mm AA M: 2 Cummins diesels; 2 props Range: 700/8 Man: 3 officers, 30 men

REMARKS: Last two differ in configuration, gun forward. More may be built.

AUXILIARIES

Bldr: . . . 1 small underway-replenishment ship

A 515 KHANJAHAN ALI

D: 2,900 tons (fl) S: . . . Dim: 76.1 × 11.4 × 5.3

M: 1 6-cyl. diesel; 1 prop; 1,350 hp

Remarks: Transferred 1983 from state-owned shipping line and equipped for underway refueling. 1,342 grt.

Bldr: Ch. & At. de St. Nazaire 1 transport, former passenger/cargo ship (Penhöet), France (In serv. 1953)

A 504 Shaheed Salahuddin (ex-Hizbal Bahr, ex-Eastern Queen, ex-General Mangan)

D: 8,800 light (14,800 fl) S: 16 kts Dim: 162.01 × 19.72 × 6.94

M: 2 Penhöet/Burmeister & Wain 9-62 BTF-115 diesels; 2 props; 9,600 hp

Electric: 1,500 kw Fuel: 1,045 tons Range: 9,750/13

Man: 25 officers, 125 men

Remarks: 11,684 grt/6,383 nrt/5,882 dwt. Purchased 18-2-81 from Bangladesh Shipping Corp. and commissioned 10-4-81. Mostly used as a stationary barracks.

1 small repair ship

A. . . SHAHAYAK

Remarks: Former riverine passenger ship, 55-m. overall. Purchased, re-engined, and commissioned as a tender in 1978.

• 1 training ship Bldr: Atlantic SB, Montreal, Canada (1957)

A 601 Shaheed Ruhul Amin (ex-Anticosti, Canadian merchant)

D: 710 tons (fl) S: 11.5 kts Dim: 47.5 × 11.1 × 3.1 A: 1/40-mm AA M: 1 Caterpillar diesel Range: 4,000/10 Man: 8 officers, 72 men

Remarks: Transferred 1972 from relief agency; recommissioned after conversion, 10-12-74.

 1 floating drydock Bldr: Tito SY, Trogir, Yugoslavia

A 701 Sundarban (In serv. 15-8-80)

Lift capacity: 3,500 tons Dim: 117.0 × 27.6 × 0.3 loaded.

Remarks: Self-docking type with 7 sectional pontoons. 17.6-m between dock walls, which are 101.4-m long.

• 1 Chinese Dinghai-class seagoing tug Bldr: Wuhu SY

A 721 KHADEM (In serv. 1984)

D: 1,472 tons (fl) S: . . . Dim: $60.22 \times 11.60 \times 4.44$ A: 4/14.5-mm mg (II \times 2) Electron Equipt: Radar: 2/ . . . nav.

M: 2 diesels; 2 props; 2,640 hp Man: 4 officers, 28 men

Range: 7,200/ . .

Remarks: 980.28 grt. See photo in addenda.

BARBADOS

COAST GUARD

Personnel (1985): 92 (11 officers, 81 men); to increase to 120

MERCHANT MARINE (1984): 35 ships - 8,414 grt

Bldr: Brooke Marine, Lowestoft, U.K. ♦ 1 patrol boat

In serv.

P 01 TRIDENT 14-4-81



Trident (P 01)

Brooke Marine, 1981

D: 165 tons (200 fl) **S**: 25 kts **Dim**: $37.50 \times 6.86 \times 1.78$

A:: 1/40-mm AA - 1/20-mm AA Man:: 25 tot.

Electron Equipt: Radar: 1/Decca TM 1226

M: 2 Paxman Valenta 12 RP 200 diesels; 2 props; 4,000 hp Range: 3,000/12

♦ 2 converted shrimp boats

Bldr: Desco Marine

P 02 Enterprise (In serv. 8-81) P 03 Excellence (In serv. 7-1-82)

D: 130 tons (fl) S: 12 kts Dim: 22.8 × 6.2 × 1.8

A: 1/20-mm AA M: 1 Caterpillar diesel; . . . hp Man: 2 officers, 8 men

Remarks: Wooden-hulled craft, converted for use as seagoing patrol boats by Swan

Boat, U.K.

Bldr: Aquarius

P 04 George Ferguson (In serv. 12-74)

D: 30 tons (fl) S: 24 kts Dim: 20.0 × 5.25 × 1.5

♦ 1 Halmatic 20-meter Guardian-class police patrol craft

M: 2 G.M. 12V71 TI diesels; 2 props; 1,300 hp Range: 650/12 Man: 11 tot.

Remarks: Fiberglass hull. Can carry 2/7.62-mm mg.

♦ 2 Halmatic 12-meter Guardian-class police patrol craft Bldr: Aquarius Boat, U.K. (In serv. 12-73 to 2-74)

P 05 COMMANDER MARSHALL P 06 J. T. C. Ramsay

D: 11.5 tons S: 21 kts Dim: 12.0 × 3.7 × 1.0

M: 2 Caterpillar Mk 334 TA diesels; 2 props; 580 hp Man: 4 tot.

REMARKS: Like P 04, used for search and rescue. Can carry 1/7.62-mm mg. Glass-reinforced plastic hull from Halmatic.

BELGIUM

Kingdom of Belgium

Personnel (1985): 300 officers, 4,191 men (including 1,116 draftees)

Merchant Marine (1984): 338 ships - 2,406,714 grt (tankers: 21 - 469,781 grt)

NAVAL AVIATION: Three Alouette-IIIB helicopters.

FRIGATES

♦ 4 Wielingen class, Type E 71

| | Bldr | Laid down | L | In serv. |
|------------------|--------------------|-----------|---------|----------|
| F 910 WIELINGEN | Boëlwerf, Temse | 5-3-74 | 30-3-76 | 20-1-78 |
| F 911 WESTDIEP | Cockerill, Hoboken | 2-9-74 | 8-12-75 | 20-1-78 |
| F 912 WANDELAAR | Boëlwerf, Temse | 5-3-75 | 21-6-77 | 27-10-78 |
| F 913 Westhinder | Cockerill, Hoboken | 8-12-75 | 31-1-77 | 27-10-78 |

FRIGATES (continued)



Westdiep (F 911)

L. & L. Van Ginderen, 7-84



Wielingen (F 910)

L. & L. Van Ginderen, 11-84

D: 1,880 tons (2,283 fl) S: 28 kts on gas turbine Dim: 106.38 (103 pp) × 12.3 × 5.3 (over sonar)

A: 4 MM 38 (II × 2) Exocet—1/100-mm DP—1/NATO Sea Sparrow SAM syst 8 missiles) - 1/375-mm Bofors ASW RL (II × 1) - 2 launching racks for L-5 ASW torpedoes

Electron Equipt: Radar: 1/Raytheon TM 1645/9X, 1/DA-05, 1/H.S.A. WM-25 Sonar: 1/SQS-505A

EW: Elcos-1 intercept - 2/Mk 36 SRBOC chaff (VI × 2) M: CODOG: 2 Cockerill CO-240V-12 diesels, each 3,000 hp; 1 Rolls-Royce

Olympus TM 3B gas turbine, 28,000 hp; 2 CP props Fuel: 250 tons diesel Electric: 2,000 kw

Range: 4,500/18; 6,000/16 Man: 15 officers, 145 men

REMARKS: Vosper fin stabilizers, 15 knots max, on one diesel, 20 knots on two. Belgian-Dutch automatic surface- and air-search radar system, including fire control and SEWACO-IV automatic tactical data system. Two Panda optical gun directors. The ASW rocket launcher carries six 103-mm rocket flare rails. U.S. SLQ-25 NIXIE ASW decoys. Planned to add 30-mm Goalkeeper AA system, probably in place of other armament.

PATROL CRAFT

• 2 Leie-class river gunboats Bldr: Hitzler, Regensburg P 902 Liberation (In serv. 4-8-54) P 903 Meuse (In serv. 20-8-53)



Meuse (P 903)

L. & L. Van Ginderen, 9-85

D: 25 tons (27.5 fl) **S:** 19 kts **Dim:** $23.25 \times 3.8 \times 0.9$ A: 2/12.7-mm mg (I × 2) M: 2 MWM diesels; 2 props; 440 hp Man: 1 officer, 6 men

Remarks: P 902 is 26 meters in length, 4 meters in beam, 30 tons (fl). Sisters Rupel (P 907, ex-Tresignies) and Ourthe (P 908) were sold 8-9-83; Leie (P 901) and Semois (P 906) were sold 21-2-85; Sambre (P 904) was donated to the Sea Scouts, and Schelde (P 905) given to a museum in 1984.

MINE WARFARE SHIPS

A consortium of Boëlwerf, Beliard Mercantile, and ACEC has been formed to study a minehunter design to follow the "Tripartite" program.

♦ 1 (+9) Tripartite class minehunters Bldr: Béliard, Ostend and Antwerp

| Laid down | L | In serv |
|-----------|---|---------|
| 24-2-83 | 26-6-84 | -85 |
| 7-83 | 19-2-85 | 1986 |
| 12-83 | 10-85 | |
| 5-84 | | 1.4.4 |
| 10-84 | 2 | |
| | | |
| | | |
| 4/4/4 | | |
| | | * * * * |
| | | |
| | 24-2-83 7-83 12-83 5-84 10-84 | 24-2-83 |



Aster (M 915) - en route to fitting-out yard

L. & L. Van Ginderen, 6-84

D: 511 tons (595 fl) S: 15 kts Dim: 51.6 (47.1 pp) × 8.96 × 2.49 (hull) A: 1/20-mm AA Electron Equipt: Radar: Decca 1229—Sonar: DUBM-21B

M: 1 Brons/Werkspoor A-RUB 215X 12 diesel; 1 CP prop; 1,900 hp (1,200 rpm); 2 120-hp maneuvering props (active rudder); bow-thruster

Electric: 880 kw Range: 3,000/12 Man: 34 tot. (49 accommodations)

Remarks: Same as French Eridan and Dutch Alkmaar classes. Original construction consortium, Polyship, dissolved. Ships reordered 12-2-81 from Béliard; hulls launched at Ostend and fitted out by Béliard Mercantile at Rupelmonde, Antwerp. Three Astazou-IV, 320-kw gas-turbine generators; 1 140-kw diesel set. Two PAP-104 remote-controlled mine locators; automatic pilot; automatic track-plotter; TORAN and Sydelis navigation systems; conventional wire sweep also. Glass-reinforced-plastic construction. To replace MSO and MSC classes.

♦ 6 U.S. Dash-class oceangoing minesweeper/minehunters

| | L | In serv. |
|---|----------|----------|
| M 902 Van Haverbeke (ex-MSO 522) | 29-10-59 | 7-11-60 |
| M 903 A. F. Dufour (ex-Lagen, ex-MSO 498) | 13-8-54 | 27-9-55 |
| M 904 DE BROUWER (ex-Nansen, ex-MSO 499) | 15-10-54 | 1-11-55 |
| M 906 Breydel (ex-AM 504) | 25-3-55 | 24-1-56 |
| M 908 Georges Truffaut (ex-AM 515) | 1-11-55 | 21-9-56 |
| M 909 Francois Bovesse (ex-AM 516) | 28-2-56 | 21-12-56 |

Bldrs: M 902: Peterson Bldrs, Sturgeon Bay, Wisc.; M 903, 904: Bellingham BY, Bellingham, Wash.; M 906: Tacoma BY, Tacoma, Wash.; M 908, 909: Tampa SB, Tampa, Fla.



Breydel (M 906)

G. Gyssels, 1-85

D: 720 tons (780 fl) S: 14 kts

Dim: 52.42 (50.3 pp) × 10.97 × 4.20 A: 2/12.7-mm mg (II × 1, not in M 906)

Electron Equipt: Radar: 1/Decca 1229 - Sonar: SQQ-14

M: 4 G.M. 8-268A diesels; 2 CP props; 1,520 hp Fuel: 53 tons diesel Range: 3,000/10; 2,400/12 Man: 5 officers, 67 men

Remarks: Transferred 1955-60, except M 903 and M 904 transferred from Norway in 1966. Equipped as minehunters, with PAP-104 remote-control minehunting submersibles. Wooden hulls. Artevelde (M 907) stricken 1-2-85.

MINE WARFARE SHIPS (continued)

♦ 5 U.S. Adjutant-class coastal minesweepers Bldr: Béliard, Ostend (M 928: Boëlwerf, Temse)

| | L | In serv. | | L | In serv. |
|-----------------|---------|----------|-----------------|---------|----------|
| M 928 STAVELOT | 26-3-55 | 1-7-55 | M 932 NIEUPOORT | 12-3-55 | 9-1-56 |
| M 929 Heist | | 4-4-56 | M 933 Koksisde | 4-6-55 | 29-11-55 |
| M 930 ROCHEFORT | 5-6-54 | 28-11-55 | | | |



Rochefort (M 930)

M. Louagie, 2-85



Heist (M 929) - restored as a minesweeper

L. & L. Van Ginderen, 9-85

D: 330 tons (390 fl) **S:** 13.5/12 kts **Dim:** 44.0 (42.1 pp) \times 8.3 \times 2.6

A: 1/40-mm AA

Electron Equipt: Radar: 1/Decca 1229 — Sonar: AN/UQS-1 M: 2 G.M. 8-268A diesels; 2 props; 880 hp Fuel: 40 tons Range: 2,700/10.5 Man: 4 officers, 17 petty officers, 19 men

Remarks: M 928, stricken 1979, restored to service 1982-83. M 929, converted to degaussing tender (A 964) in 1978, restored as a minesweeper 6-85. Two minehunter conversions, *Verriers* (M 934, ex-U.S. AMS 259) and *Veurne* (M 935, ex-U.S. AMS 260) stricken 6-85. M 932 has a lengthened forward deckhouse.

♦ 12 Herstal-class inshore minesweepers Bldr: Mercantile Marine Yd., Kruibeke

| | L | In serv. | | L | In serv. |
|------------------|----------|----------|---------------|----------|----------|
| M 473 Lokeren | 18-5-57 | 8-8-58 | M 479 Huy | 17-11-56 | 14-10-57 |
| M 474 Turnhout | 7-9-57 | 29-9-58 | M 480 Seraing | 16-3-57 | 24-3-58 |
| M 475 Tongeren | 16-11-57 | 9-12-58 | M 482 Vise | 7-9-57 | 11-9-58 |
| M 476 Merksem | 5-4-58 | 6-2-59 | M 483 Ougrée | 16-11-57 | 10-11-58 |
| M 477 Oudenaerde | 3-5-58 | 25-4-59 | M 484 DINANT | 5-4-58 | 14-1-59 |
| M 478 Herstal | 6-8-56 | 14-10-57 | M 485 Andenne | 3-5-58 | 20-4-59 |



Vise (M 482)

L. & L. Van Ginderen, 5-85

D: 160 tons (190 fl) S: 15 kts Dim: 34.5 (32.5 pp) × 6.7 × 2.1 A: 2/12.7-mm mg (II × 1) Electron Equipt: Radar: 1/Decca 1229 M: 2 Fiat-Mercedes Benz MB 820 diesels; 2 props; 1,260 hp

Fuel: 24 tons Range: 2,300/10 Man: 1 officer, 7 petty officers, 9 men

Remarks: Wooden hulls. Intended to sweep the Schelde River. Fitted for magnetic, acoustic, and mechanical sweeping to a depth of 4.50 to 10 m. M 471, 472, 478 were designated RDS-Ready Duty Ship, sweep gear removed, deckhouse in place of cable reel, and pollution cleanup gear and special cranes added aft; M 471, 478 restored as minesweepers, 1983, while Kortijk (M 472) has been altered to serve as a research ship. Modified version of British "-ham" class. M 478 to M 485, built with U.S funds, are ex-U.S. MSI 90-97. Sister Hasselt (M 471) scheduled to strike early 1986.

AUXILIARIES

♦ 2 "command and logistics support ships" for mine countermeasures

 Bldr
 Laid down
 L
 In serv.

 A 961 ZINNIA
 Cockerill (Hoboken)
 8-11-66
 6-5-67
 5-9-67



Zinnia (A 961)

G. Gyssels, 5-83

D: 1,705 tons (2,685 fl) S: 18 kts (20 on trials)
Dim: 99.5 (94.2 wl) × 14.0 × 3.6 Range: 14,000/12.5
A: 3/40-mm (I × 3)—1/Alouette-IIIB helicopter
Electron Equipt: Radar: 2/Decca payigational

Electron Equipt: Radar: 2/Decca navigational
M: 2 Cockerill-Ougrée V 12 TR 240 CO diesels; 1 CP prop; 5,000 hp
Fuel: 150 m³ diesel; 300 m³ for supply to minesweepers — 500 tons total

Man: 13 officers, 46 petty officers, 64 men

Remarks: Fin stabilizers, telescoping helicopter hangar.

 Bldr
 Laid down
 L
 In serv.

 A 960 Godetia
 Boëlwerf, Temse
 15-2-65
 7-12-65
 23-5-66



Godetia (A 960)

L. & L. Van Ginderen, 4-84



Godetia (A960)

L. & L. Van Ginderen, 4-84

AUXILIARIES (continued)

D: 1,700 tons (2,500 fl) **S**: 18 kts **Dim**: 91.83 (87.85 pp) \times 14.0 \times 3.5

A: 1/40-mm AA Electron Equipt: Radar: 2/nav. M: 4 ACEC-M.A.N. diesels; 2 CP props; 5,400 hp Fuel: 294 tons Range: 2,250/15; 8,700/12 Man: 10 officers, 37 petty officers, 48 men

Remarks: 15 knots on one diesel. Passive tank stabilization. Protected closed-circuit ventilation. Can accommodate oceanographic research personnel and has space for laboratory. Minesweeping cables are stowed on reels on the helicopter deck, which has been extended aft to continue to permit one Alouette-III to land. 8/12.7-mm mg (II × 4) removed 1983; quickly remountable.

♦ 1 new-construction oceanographic research ship

Bldr Laid down In serv. 17-10-83 A. 962 Belgica Boëlwerf, Temse 6-1-84 5-7-84

D: 835 tons (fl) S: 12 kts Dim: 50.90 (44.95 pp) × 10.00 × 4.40

M: 1 ABC 6M DZC-1000-150 diesel; 1 Kort-nozzle prop; 1,570 hp Fuel: 158 tons

Electron Equipt: Radar: 1/Decca . . . nav. Electric: 640 kw Range: 20,000/12 Man: 15 crew + 11 scientists



Belgica (A 962)

L. & L. Van Ginderen, 9-84



Belgica (A 962)

L. & L. Van Ginderen, 6-84

REMARKS: For use in North and Irish Seas or for fisheries or hydrographic research. Can carry two laboratory containers on deck. 150-hp thrusters fore and aft. Very bluff hull lines, bulbous bow.



Kortrijk (M 472)

G. Gyssels, 4-84

♦ 1 converted Herstal-class minesweeper

Bldr In serv. M 472 KORTRIJK Mercantile Marine, Kruibeke 5-57 13-6-58

REMARKS: Data as for Herstal class. Used for oceanographic research in place of the stricken Mechelen (A 962); had been used as a pollution clearance ship.

♦ 1 U.S. Adjutant-class former minesweeper Bldr: Boëlwerf, Temse

In serv.

A 963 Spa (ex-M 927) - Missile/munitions transport for frigates 1-1-56



Spa (A 963)

L. & L. Van Ginderen, 10-84

Remarks: Data as for minesweeper sisters.

♦ 1 oceanographic research and sail-training craft

Laid down Bldr In serv. A 958 ZENOBE GRAMME Boëlwerf, Temse 7-10-60 23-10-61 1962



Zenobe Gramme (A 958)

L. & L. Van Ginderen, 3-84

D: 149 tons **S:** 10 kts **Dim:** 28.15 (23.10 wl) \times 6.85 \times 2.64 M: 1 MWM 518A diesel; 232 hp Man: 14 tot.

Remarks: Fitted out as Bermudian ketch (240m³ sail area).

♦ 1 seagoing tug Bldr: Ch. Navals & Atelier Const. de Hemixem

A 954 ZEEMEEUW (In serv. 1971)

D: 400 tons (fl) **S:** 10 kts **Dim:** 27.94 (26.60 pp) \times 7.29 \times 3.37

M: 2 ABC 6-cyl. diesels; 2 props. . . . hp Electric: 96 kw Man: . . .

Remarks: 146 grt/24 nrt. Acquired from another Belgian government agency, 1982. Based at Zeebrugge and used on pollution control duties.

BELGIUM (continued) AUXILIARIES (continued)



Zeemeeuw (A 954)

L. & L. Van Ginderen, 2-83

♦ 2 seagoing tugs Bldr: H. Bodewes, Millengen a/d Ryn (In serv. 1960)

A 950 Valcke (ex-Astronoom, ex-Schouwenbank) A 998 Ekster (ex-Astrodom, ex-Steenbank)



Valcke (A 950)

L. & L. Van Ginderen, 9-84

D: 420 tons (fl) **S:** 13 kts **Dim:** $30.08 \times 7.55 \times 2.99$

Electron Equipt: Radar: 1/Decca 1229

M: 24-cycle, single-acting 8-cyl. diesels, electric drive; 1 prop; 1,250 hp

Remarks: 183 grt. Purchased 1980 from A. Smit. Based at Zeebrugge on pollutioncontrol duties. A 950 in collision 1985, out of service for many months.

YARD AND SERVICE CRAFT

Note: The small harbor tug Hommel (A 951) had been stricken by mid-1985.

• 2 Bij-class small harbor tugs

Bldr In serv.
A 953 Bij Akerboom, Lisse 1959
A 956 Krekel Rupelmonde SY 1961



Krekel (A 956)

L. & L. Van Ginderen, 3-82

D: 60 tons (71 fl) S: 10 kts Dim: 17.65 $(16.0) \times 5.2 \times 2.0$ M: 2 MWM RHS 518A diesels; 2 Voith-Schneider vertical cycloidal props; 300 hp

- 1 small fireboat tug
 A 959 Mier
 Bldr: Liège SY (1962): 12.5 m o.a.,
 17.5 tons, 90 hp
- 1 personnel launch SPIN (1958) 32 tons, 14.6 m., 1 diesel; Voith-Schneider prop; 250 hp; 8 kts—can also be used as a tug.

Note: Fuel barges FN 4, 5, 6 stricken 1983, as was diving tender ZM4.



Spin

G. Gyssels, 10-81

BELIZE

Personnel (1985): 33 total

Merchant Marine (1984): 3 ships - 620 grt

AVIATION: 2 Pilatus - Britten-Norman BN 2B Defender.

♦ 2 20-meter Wasp class patrol craft

Bldr: Souter, Cowes, U.K. (In serv.

19-9-84)

PB 01 Dangriga PB 02 Toledo



Dangriga (PB 01)

L. Dury, 8-83

D: 36.25 tons (fl) **S:** 23 kts **Dim:** $20.00 (16.00 \text{ pp}) \times 5.00 \times 1.50$ **A:** $1/12.7 \text{-mm mg} - 4/7.72 \text{-mm mg (I} \times 4)$ **Electron Equipt:** Radar: . . . **M:** 2 G.M. 16V71 TI diesels; 2 props; 2,400 hp **Man:** 2 officers, 6 men **Range:** 430/18

Remarks: Glass-reinforced plastic construction. Completed 8-84, not commissioned in-country until 19-9-84.

♦ 1 patrol craft Bldr: Brooke Marine, Lowestoft, U.K. (In serv. 1982)

PBM 02 BELMOPAN

D: 15 tons (fl) S: 22 kts Dim: $12.2 \times 3.6 \times 0.6$ A: 3 mg (I \times 3) M: 2 Caterpillar diesels; 2 props; 370 hp

REMARKS: Sister Belize (PBM 01) deleted 1982.

People's Republic of Benin

Personnel: About 100

MERCHANT MARINE (1984): 13 ships - 4,604 grt



Four Zhuk in the port of Cotonou

1-84

♦ 2 ex-North Korean, Soviet P 4-class torpedo boats (transferred 1979)

D: 19.3 tons (22.4 fl) S: 54 kts Dim: 19.3 × 3.7 × 1.0

A: 2/14.5-mm mg (II × 1)

Electron Equipt: Radar: 1/. . . nav. M: 2 M50 diesels; 2 props; 2,400 hp

Remarks: Aluminum-construction hydroplanes. May in fact be newer craft of similar design to P 4 from North Korea. Torpedo tubes removed.

♦ 5 Soviet Zhuk-class patrol craft

D: 60 tons (fl) **S:** 34 kts **Dim:** $24.0 \times 5.0 \times 1.5$ (props) **A:** 4/14.5-mm mg (II \times 2) **M:** 2 M50 diesels; 2 props; 2,400 hp

Electron Equipt: Radar: 1/spin Trough

Remarks: Transferred: 2 in 1979, 2 in 5-80, 1 in 9-80.

BERMUDA

The Crown Colony of Bermuda

Merchant Marine (1984): 76 ships - 822,123 grt (8 tankers - 230,105 grt)

BERMUDIAN POLICE

♦ 1 sport cruiser Bldr: Harris Boat, Newburyport, Mass., U.S.A.

Blue Heron (In serv. 22-5-78)

D: 7 tons S: . . . Dim: 10.9 × . . . × . . . M: 2 G.M. diesels; 2 props; 260 hp Man: 3

• 2 small craft Bldr: Mako Marine, Florida, U.S.A.

HERON II (In serv. 7-81) HERON III (In serv. 4-78)

Remarks: 7.1 and 6.7 m overall, about 1 ton, powered by one 235-hp Evinrude outboard each. Patrol craft Heron I and White Heron stricken 1983. New patrol craft acquisitions are planned.

BOLIVIA

Republic of Bolivia

Personnel (1985): 4,000 including 600 Almirante Grau Battalion marines

Merchant Marine (1984): 2 ships - 14,913 grt

Note: The Bolivian River and Lake Force was retitled the Bolivian Navy on 1-1-82.

Naval Aviation: 1 Cessna U206 and 3 Cessna 402C light transports.

♦ 1 seagoing cargo ship

Bldr: Fairfield, U.K., 1951

LIBERTADOR BOLÍVAR (ex-Simon Bolívar, ex-Ciudad de Barquisimeto)

D: 9,000 tons S: 14.5 kts Dim: 128.3 (120.4 pp) × 16.76 × 6.7 M: 1.Doxford diesel; 4,350 hp Range: 7,000/14

Remarks: Donated by Venezuela, 1977. Home-ported in Argentina. Used to generate revenue and for training in preparation for possible ceding to Bolivia of a "corridor to the sea" between Peru and Chile. 4,214 grt/6,390 dwt/2,352 nrt.

♦ 7 river patrol craft/transports

MO 1 ALMIRANTE GRAU, 52 tons

MO 5 Comandante Arandia, 82 tons

MO 2 NICOLAS SUAREZ, 26 tons MO 6 TOPATER

MO 3 Mariscal Santa Cruz, 52 tons

MO 8 CORONEL EDUARDO AVAROA, 82 tons

MO 4 Presidente Busch, 52 tons

REMARKS: Iron- or wooden-hulled, raftlike craft with high superstructures and speeds of 8-10 knots.

• 1 U.S. design river patrol boat

Bldr: Hope/Progressive SB, Houma, La.

PR 51 SANTA CRUZ DE LA SIERRA (In serv. 1985)

D: . . . S: . . . Dim: $20.42 \times .$. . \times . . . A: 1/20-mm AA Electron Equipt: Radar: 1/Furuno nav.

M: 2 G.M. diesels; 2 props; . . . hp Man: 10 tot.

Remarks: Aluminum hull. See photo in addenda.

 1 or more Brown-class patrol launches (In serv. 1978- . . .)

Almirante Guillermo Brown

D: 4 tons S: 12 kts Dim: 7.0 × 2.3 × 1.0 M: 1 Ford Penta diesel; 116 hp Man: 12 tot.

♦ 2 ex-U.S. PBR Mk-II patrol boats (Transferred 1974)

D: 8.9 tons S: 24 kts Dim: 9.73 × 3.53 × 0.81 A: 3/12.7-mm mg (II × 1, I × 1) - 1/60-mm mortar

Electron Equipt: Radar: 1/Raytheon 1900

M: 2 G.M. 6V53N diesels; 2 water jets; 430 hp Range: 150/23 Man: 4 tot.

- ◆ 24 miscellaneous Lake Titicaca and river service launches (several oar-propelled)
- 2 hospital launches

JULIAN APAZA BRUNO RACUA

REMARKS: Launched 1977-78; 17 tons. Apaza a gift of the USA.

Personnel (1985): 6,285 officers, 44,000 men (including 14,000 marines in the Fuzileiros Navais and reservists).

Merchant Marine (1984): 706 ships - 5,721,821 grt (tankers: 86 - 2,794,500 grt)

NAVAL AVIATION: Uses 4 SH-3D and 4 SH-3H Sea King, 9 Westland Wasp HAS.1 (UH-2), 17 Bell 206B JetRanger II (SAH-11) helicopters, 9 Westland Mk 21 Lynx (to be equipped with Sea Skua missiles), 11 AS 350 Esquilo (UH-12), and 3 AS-330 Super Puma. In 3-85, 16 used Bell 206Bs were ordered in the U.S. in lieu of purchasing a planned 15 AS 332F Super Puma with AM-39 missiles. Plans to acquire A-4 Skyhawk aircraft have been canceled.

The Air Force makes available to the Navy: 3 RC-130E Hercules, and 12 EMB Bandeirante in a sea-surveillance version. Eight Grumman S-2E Tracker aircraft are available for use on Minas Gerais, and 5 S-2A are used for training and transport. To support the Navy, the Air Force also operates 2 Piper/Embraer Seneca II and 4 Neiva T-25 Universal aircraft. The Air Force Coastal Command also has 6 Puma helicopters for search-and-rescue purposes.

Weapons and Sensors: Avibras Indústria Aerospacial is developing the Barracuda anti-ship missile. The SM-70 version will be quadruple-mounted on trucks for coastal defeuse, and the MM-70 is for shipboard use. Range: 70-km. Length: 5-m.

Warships In Service Or Under Construction As Of 1 January 1986

Tons Main armament

♦ 1 light aircraft carrier (ASW)

MINAS GERAIS 1944 15,890 10/40-mm AA, 18-22 aircraft

♦ 7 (+3) submarines

0 (+3) Type 1400 1986-8/533-mm TT 1,400 3 OBERON 1971-75 1,610 8/533-mm TT 10/533-mm TT 2 GUPPY III 1945 1.650 1,517 2 GUPPY II 1944-45 10/533-mm TT

WARSHIPS (continued)

| 1944-45 | 2,425 | 2/127-mm DP, 6 ASW TT ASROC |
|---------|----------------------------------|--|
| 1944 | 2,200 | 6/127-mm DP, 6 ASW TT |
| 1944 | 2,200 | 6/127-mm DP, 1 Sea Cat SAM,6 ASW TT |
| | | |
| 1985- | 1,600 | 4 Exocet, 1/114-mm DP, 6 ASW TT, 1 helicop- ter |
| 1974-75 | 3,200 | 1/114-mm DP, 2/40-mm AA, 1 Branik system, 2 Sea Cat systems, 1 Bofors ASW RL, 6 ASW TT, 1 helicopter |
| 1976-77 | 3,200 | 2/114-mm DP, 2/40-mm AA, 4 Exocet, 2 Sea Cat systems, 1 Bofors ASW RL, 6 ASW TT, 1 heli- copter |
| | 1944 1944 1985- 1974-75 | 1944 2,200 1944 2,200 1985- 1,600 1974-75 3,200 |

♦ 12 corvettes

| 9 Imperial Marinheiro | 1954-55 | 911 | 1/76.2-mm DP |
|-----------------------|---------|-----|--------------|
| 3 Ѕотоуомо | 1945 | 570 | 2/20-mm AA |

- 6 patrol boats
- 7 (+ 2) river patrol ships
- 6 mine warfare ships
- 2 amphibious warfare ships

LIGHT AIRCRAFT CARRIER (ASW)

Note: Long-range plans call for replacing *Minas Gerais* with one or two small carriers. Although it was announced in 1984 that the first of these would be operational in 1990, this seems very unlikely. The aircraft to be carried *may* include a navalized version of the Embraer AMX fighter project. Plans to acquire A-4 Skyhawks as an interim jet aircraft have been shelved.

• 1 British Colossus class

| | Bldr | Laid down | L | In serv. |
|-------------------|------------------|-----------|---------|----------|
| A 11 MINAS GERAIS | Swan Hunter, | 16-11-42 | 23-3-44 | 15-1-45 |
| (ex-Venegeance) | Wallsend-on-Tyne | | | |

D: 15,890 tons (19,890 fl) **S:** 24 kts **Dim:** 211.25 × 36.44 (24.50 hull) × 7.15

A: 10/40-mm AA (IV \times 2, II \times 1) -6-8/S-2E aircraft -4-6/SH-3, 2/SAH-11, 3/UH-12 helicopters

Electron Equipt: Radar: 1/SPS-40B, 1/SPS-4, 1/Raytheon 1402, 2/SPG-34 fire control—EW: SLR-2

M: Parsons GT; 2 props; 42,000 hp

Boilers: 4 Admiralty 3-drum; 28 kg/cm², 371°C Fuel: 3,200 tons

Electric: 2,500 kw Range: 12,000/14; 6,200/23 Man: 1,000 ship's company plus 300 aviation personnel



Minas Gerais (A 11)

U.S. Navy, 1985



Minas Gerais (A 11)

U.S. Navy, 1985



Minas Gerais (A 11)

198

Remarks: Purchased from Great Britain in 12-56; refitted in Rotterdam, completing in 1960 with new weapons, steam catapult, angled flight deck (8.5°), mirror optical landing equipment, new radars, and 2 new elevators. GFCS for the 40-mm AA include 2 Mk 63 (with SPG-34 radar on the quadruple mounts) and 1 Mk 51 Mod. 2. Hangar 135.6 × 15.8 × 5.3 high; 2 elevators 13.7 × 10.4. Catapult can launch 15-ton aircraft. In refit 1976-81. A data link system for cooperation with the Niteroi class has been installed, and U.S. SPS-40B radar has replaced SPS-12. Plans to purchase 12 A-4 Skyhawk fighter-bombers for use from this ship were announced in 1984 and canceled early in 1985. The SPS-8B height-finding radar was removed during 1984.

SUBMARINES

Note: On 29-11-84 the Navy announced plans to build a 2,200-ton "NAC-1" class submarine of Brazilian design following the construction of the two IKL Type 1400 submarines in Brazil, Long-range plans also call for construction of nuclear-powered submarines.

♦ 0 (+3 + 2) West German Type 1400 class

| | Bldr | Laid down | L | In serv. |
|-----------|-------------------------|-----------|------|----------|
| S Tupi | Howaldtswerke, Kiel | 8-3-85 | 1986 | 1988 |
| S Tamoyo | Howaldtswerke, Kiel | | | 1989 |
| S TIMBURA | Act Ilha dae Cohras Rio | | | |

D: 1,400 tons surf., 1,900 sub. **S:** 21.5 sub. **Dim:** $61.0 \times 6.2 \times 5.5$

A: 8/533-mm TT fwd. — 16 Mk 24 Mod. 1 Tigerfish torpedoes

Electron Equipt: Radar: . .

Sonar: Krupp-Atlas CSV-83/1 EW: Thomson-CSF DR-4000

M: 4 MTU 12V493 TY60, 600 bhp diesels, 4 AEG 420-kw generators, electric drive; 1 prop; 5,000 hp

Range: 8,200/8 snorkel; 50/16, 400/4 submerged Fuel: 118 tons Man: 30 tot.

Remarks: The largest version of the Type 209 yet ordered; order placed 8-82. Will have Ferranti KAFS action data system, 2 Kollmorgan periscopes, Sperry MK 29 Mod. 2 Ships Inertial Guidance System (SINS). Can make 25 knots for brief period. Diving depth: 250 m.

• 3 British Oberon class

| | Bldr | Laid down | L | In serv. |
|----------------|----------------|-----------|----------|----------|
| S 20 Humaita | Vickers-Barrow | 3-11-70 | 5-10-71 | 18-6-73 |
| S 21 TONELERO | Vickers-Barrow | 18-21-70 | 22-11-72 | 8-9-78 |
| S 22 RIACHUELO | Vickers-Barrow | 26-5-73 | 6-9-75 | 12-3-77 |



Riachuelo (S 22)

L. & L. Van Ginderen, 7-77

D: 1,610 tons standard, 2,030 surf., 2,400 sub.

S: 17.5/15 kts Dim: 89.9 × 8.07 × 5.48

A: 6/533-mm TT forward (18 U.K. Mk 8 and Mk 24 and U.S. Mk 37 torpedoes)

Electron Equipt: Sonar: 1/187, 1/2007, DUUG-1, AUUD-1

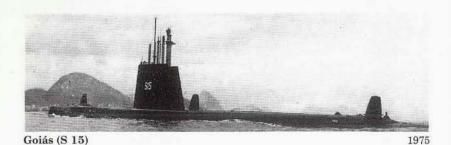
M: 2 Admiralty Standard Range 16 VVS-ASR1 diesels; 2 electric generators, each 1,280 kw; 2 electric motors; 2 props; 6,000 hp
Range: 11,000/11 snorkel Endurance: 56 days Man: 5 officers, 57 men

SUBMARINES (continued)

Remarks: S 21 several years late entering active service due to a fire on board during construction. Batteries made up of 224 elements in two sections, with a 7,240-ampere capacity for five hours. "One-man control" system for immersion and diving. Digital tactical data system. Satellite navigation receiver installed. Two short torpedo tubes aft are no longer used.

♦ 2 ex-U.S. GUPPY III class

| | Bldr | Laid down | L | In serv. |
|---|-------------------|-----------|----------|----------|
| S 15 Gorás | Cramp S.B. | 23-8-43 | 13-5-45 | 29-1-46 |
| (ex-Trumpetfish, SS 425) S 16 Amazonas (ex-Greenfish, SS 351) | Electric Boat Co. | 29-1-44 | 21-12-45 | 7-6-46 |



D: 1,650 tons standard, 1,975 surf., 2,540 sub. S: 20/13-15 kts Dim: 99.4 × 8.2 × 5.2 A: 10/533-mm TTs, 6 fwd, 4 aft (24 torpedoes) Electron Equipt: Radar: 1/SS-2A - Sonar: BQG-4 PUFFS, BQR-2B M: Diesel-electric propulsion; 4 diesel generator sets (6,400 hp); 2 electric motors (5,400 hp)

Remarks: S 15 purchased 17-10-73, S 16 on 19-12-73. S 15 converted to GUPPY-II in 1948, lengthened to GUPPY III in 1962; S 16 to GUPPY II 1948, GUPPY III in 1961. S 15 has Fairbanks-Morse 38D 81/s-10 diesels, S 16 has G.M. 16-278A. Two 126-cell

Range: 12,000/10 surf., 95/5 sub. Man: 86 tot.

♦ 2 ex-U.S. GUPPY II class

| | Bldr | Laid down | L | In serv. |
|--|----------------|-----------|----------|----------|
| S 12 Bahia (ex-Sea Leopard, SS 483) | Portsmouth NSY | 7-11-44 | 2-3-45 | 11-6-45 |
| S 14 CEARA (ex-Amberjack, SS 522) | Boston NSY | 8-2-44 | 15-12-44 | 4-3-46 |

D: 1,517 tons standard, 1,950 surf., 2,540 sub. S: 18/13-15 kts Dim: 93.8 × 8.2 × 5.2 A: 10/533-mm TT, 6 fwd, 4 aft (24 torpedoes) Electron Equipt: Radar: 1/SS-2A - Sonar: BQR-2B, BQS-4

M: Diesel-electric propulsion; 3 Fairbanks-Morse 38D 81/4-10 generator groups; 2 electric motors; 2 props; 4,800/5,400 hp

Fuel: 330 tons diesel Range: 10,000/10 surf., 95/5 sub. Man: 86 tot.

Remarks: Purchased 27-3-73 and 17-10-73. One generator set removed on conversion. Two 126-cell batteries. Converted from fleet submarines 1947-49. S 14 has auxiliary rudder atop hull. Sisters Rio Grande do Sul (S 11, ex-Grampus, SS 523) and Rio de Janeiro (S 13, ex-Odax, SS 484) stricken 1978: Guanabara (S 10, ex-Dogfish, SS 350) stricken late 1983.

DESTROYERS

♦ 2 ex-U.S. Gearing class, FRAM I

| | Bldr | Laid down | L | In serv. |
|-------------------------------|--------------------|-----------|---------|----------|
| D 25 Marcilio Diaz | Consolidated Steel | 29-5-44 | 8-11-44 | 10-3-45 |
| (ex-Henry W. Tucker, DDR 875) | Corp | | | |
| D 26 Mariz E. Barros | Consolidated Steel | 20-6-44 | 26-5-45 | 1-10-45 |
| (ex-Brinkley Bass, DD 887) | Corp | | | |



Marcilio Diaz (D 25) G. Gyssels, 1981

D: 2,425 tons (3,600 fl) S: 30 kts

Dim: 119.17 × 12.52 × 4.61 (6.4 over sonar)

A: 4/127-mm (II \times 2) — 1/ASROC ASW syst. (VIII \times 1; 12 total missiles) — 6/324-mm Mk 32 ASW TT (III \times 2) — 1/Wasp helicopter

Electron Equipt: Radar: 1/SPS-10, 1/SPS-40, 1/Mk 25 fire control Sonar: 1/SQS-23-EW: WLR-1, ULQ-6

M: 2 sets GT; 2 props, 60,000 hp

Boilers: 4 Babcock & Wilcox, 43.3 kg, 454°C Electric: 1,200 kw Fuel: 750 tons Range: 2,400/25; 4,800/15 Man: 14 officers, 260 men

Remarks: Purchased 3-12-73 and reached Brazil in 6-74. Mk 37 GFCS. Former DASH drone ASW helicopter hangar used for Westland Wasp.

♦ 5 ex-U.S. Allen M. Sumner class

| | Bldr | Laid down | L | In serv. |
|---|----------------------|-----------|---------|----------|
| D 34 Mato Grosso (ex-Compton, DD 705) | Federal SB, Kearny | 28-3-44 | 17-9-44 | 4-11-44 |
| D 35 SERGIPE (ex-James C. Owens, DD 776) | Bethlehem, San Pedro | 9-4-44 | 1-10-44 | 17-2-45 |
| D 36 Alagaos (ex-Buck, DD 761) | Bethlehem, San Fran. | 1-2-44 | 11-3-44 | 28-6-46 |
| D 37 Rio Grande do Norte (ex-Strong, DD 758) | Bethlehem, San Fran. | 25-7-43 | 23-4-44 | 8-3-45 |
| D 38 ESPIRITO SANTO (ex-Lowry, DD 770) | Bethlehem, San Pedro | 1-8-43 | 6-2-44 | 28-7-44 |



Rio Grande do Norte (D 37)

U.S. Navy, 1985



Mato Grosso (D 34) - with Sea Cat SAM system aft

D: 2,200 tons (3,320 fl) **S**: 30 kts **Dim**: $114.75 \times 12.45 \times 5.8$

A: 6/127-mm (II × 3) — (D 34 only; 1/quadruple Sea Cat SAM) — 2/Hedgehog ASW RL (XXIV × 2) - 6/324-mm Mk 32 ASW TT (III × 2) - 1/Wasp helicopter (not on D34)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-40 (D 34: 1/SPS-6, D 38; 1/SPS-29), 1 Mk 25 fire-control - EW: WRL-1 or 3

intercept Sonar: 1/SQS-44 (D 34: SQS-31); D 35 also: SQA-10 VDS

M: 2 sets GT; 2 props; 60,000 hp

Boilers: 4 Babcock & Wilcox, 43.3 kg/cm², 454°C Fuel: 460 tons Electric: 1,200 kw Range: 1,260/30; 4,600/15 Man: 15 officers, 260 men

Remarks: All except D 34 had FRAM II modernization. D 34 transferred 27-9-72, the others in 1973. Mk 37 GFCS. Sea Cat system added in D 34 uses M 20 optical director. D 38 has ULQ-6 jamming gear. D 35 collided with a merchant ship 11-84, out of service for 8-mos. or more.

♦ 3 ex-U.S. Fletcher class

| | Bldr | Laid down | L | In serv. |
|---|----------------------|-----------|----------|----------|
| D 31 PIAUI (ex-Lewis | Federal SB & DD | 31-3-43 | 1-8-43 | 29-9-43 |
| Hancock, DD 675) | | | | |
| D 32 Santa Catarina (ex-Irwin, DD 794) | Bethlehem, San Pedro | 2-5-43 | 31-10-43 | 14-2-44 |
| D 33 Maranhão (ex-Shields, DD 596) | Puget Sound B & DD | 10-8-44 | 29-4-44 | 8-2-45 |

D: 2,050 tons (2,850 fl) **S:** 33 kts **Dim:** $114.85 \times 12.03 \times 5.5$ A: 5/127-mm DP (I \times 5) -10/40-mm AA (IV \times 2, II \times 2 - D 33: none) Electron Equipt: Radar: 1/SPS-10, 1/SPS-66, 1/Mk 25 fire-control M: 2 sets GT; 2 props; 60,000 hp Electric: 880 kw Boilers: 4 Babcock & Wilcox, 43.3 kg/cm², 454°C Fuel: 450 tons

Range: 1,260/30; 3,600/14 Man: 15 officers, 247 men



Piaui (D 31)

L. & L. Van Ginderen, 5-83

Remarks: D 31 transferred on loan under Mutual Aid Agreement on 2-8-67, D 32 on 10-5-68. D 33 purchased 1-7-72; the other two were bought outright on 11-4-73. ASW armament and sonar were to have been deleted and the ships used for 200-nm Economic Zone patrol, but were placed in Special Reserve in 1983 with quintuple 533-mm TT mount, 2 Hedgehog ASW spigot mortars and a d.c. rack still aboard. Unlikely now to see further service. Mk 37 GFCS for 127-mm, 3 Mk 5/mod. 1 GFCS for 40-mm.

FRIGATES

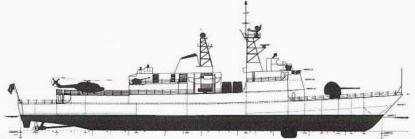
♦ 0 (+4) new-construction ocean patrol frigates Bldr: First two: Ast. Ilha das Cobras, Rio; others: Caneco, . . .

| | Laid down | L | In serv. |
|----------------------|-----------|------|----------|
| V28 Inhaúma | 23-9-83 | -85 | 6-87 |
| V29 Jaceguary | 5-10-84 | 6-86 | 4-88 |
| V30 Frontin | | | |
| V31 Julio de Noronha | | | |



Inhaúma (V 28) - artist's impression

1985



New ocean patrol frigate

D: 1,600 tons (1,900 fl) S: 26 kts Dim: 95.77 (90.00 pp) \times 11.40 \times 3.64 A: 4/MM 38 Exocet SSM — 1/114-mm Vickers Mk 8 DP — 2/40-mm Bofors L 70 AA (I \times 2) — 6/324-mm ASW TT for Mk 46 torpedoes (III \times 2) — 1/Lynx helicopter

Electron Equipt: Radar: 1/navigational, 1/Plessey AWS-4, 1/Orion RTN-10X Sonar: Krupp-Atlas. ASO-4-2

EW: . . . passive, 2/Plessey Shield chaff RL (VI × 2)

M: CODOG: 1 G.E. LM-2500 gas turbine, 27,000 hp; 2 MTU 16V956 TB91 diesels, 7,880 hp; 2 CP props

Range: 4,000/15. Man: 16 officers, 31 petty officers, 73 men

Remarks: Originally to have been a program of 12 smaller "corvettes," intended for Coast Guard service. Four were authorized 11-81, with the possibility of more later, and the first two were ordered 15-2-82. Will have Ferranti CAAIS 2-50 (Computer-Assisted Information System). The projected 6th through 12th ships are to carry the Brazilian-designed Barracuda SSM in place of Exocet and will also have eight Avibras SS-1-N SAMs.

♦ 6 British Vosper Thornycroft Mk 10 class

| ASW: | Bldr | Laid down | L | In serv. |
|--------------------|---------------------------|-----------|---------|----------|
| F 40 NITEROI | Thornycroft, Woolston | 8-6-72 | 8-2-74 | 20-11-76 |
| F 41 Defensora | Thornycroft, Woolston | 14-12-75 | 27-3-75 | 5-3-77 |
| F 44 Independencia | Ast. Ilha das Cobras, Rio | 11-6-72 | 2-9-74 | 3-9-79 |
| | | | | |

| F 45 União General-purpose: | Ast. Ilha das Cobras, Rio | 11-6-72 | 14-3-75 | 12-9-80 |
|--------------------------------|---------------------------|---------|---------|----------|
| F 42 Constitução | Thornycroft, Woolston | 13-3-74 | 15-4-76 | 31-3-78 |
| F 43 LIBERAL | Thronycroft, Woolston | 2-5-75 | 7-2-77 | 18-11-78 |



Constitução (F 42) - general-purpose version

Vosper, 1979



Liberal (F 43) - general-purpose version

L. & L. Van Ginderen, 7-85



Independencia (F 44) - ASW version

U.S. Navy, 1983

D: 3,200 tons (3,800 fl)

S: 30.5 kts (28 cruising on gas turbines, 22 on diesels) Dim: 129.24 (121.92 pp) \times 13.52×4.20 (5.94 sonar)

A: ASW type: 1/114-mm Mk 8 Vickers automatic DP -2/40-mm Bofors AA (I \times 2) -2/Sea Cat SAM systems (III \times 2) - Branik ASW system - 1/375-mm, Bofors ASW RL (II \times 1) - 6/324-mm ASW TT (III \times 2) - 1/Lynx helicopter - 1/d.c. rack (5 charges)

General-purpose type: similar but without the Branik system and with a second 114-mm Mk 8 aft and 4 launchers (II × 2) for the MM 38 Exocet SSM system

Electron Equipt: Radar: 1/Plessey AWS-2 air search, 1/H.S.A. ZW-06, 2/Orion RTN-10 X f.c. — 1/Ikara tracker (not in F 42, 43) Sonar: 1/EDO 610 E; ASW ships also have 1/EDO 700 E VDS

EW: Decca RDL-2/3 intercept—2/Plessey Shield RL (VI × 2)

M: CODOG: 2 Rolls-Royce Olympus TM3B gas turbines, 28,000 hp each; 4 MTU
16V956 TB91 diesels, 3,940 hp each; 2 Escher-Wyss CP props; 56,000 hp max.

Endurance: 45 days Electric: 4,500 kw Fuel: 480 tons Range: 1,300/29; 5,300/17 Man: 21 officers, 180 men

Remarks: Ordered 20-9-70. Fitted with retractable fin stabilizers. Branik is the name of the system devised for handling the Australian Ikara ASW missile in these ships. All have CAAIS action data system (Ferranti 1600B computers) and are equipped with Decca EW gear. The Brazilian-built units experienced considerable delays in fitting out. Plessey Shield decoy launchers were ordered for these ships in 1984.

CORVETTES

♦ 9 Imperial Marinheiro class Bldr: L. Smit, Kinderdijk, Netherlands

| | L | In serv. |
|--------------------------|----------|----------|
| V 15 IMPERIAL MARINHEIRO | 24-11-54 | 8-6-55 |
| V 16 IGUATEMI | 1954 | 17-9-55 |
| V 18 FORTE DE COIMBRA | 11-6-54 | 26-7-55 |
| V 19 Caboclo | 28-8-54 | 4-55 |
| V 20 Angostura | 1955 | 1955 |
| V 21 Bahiana | 11-54 | 26-6-55 |
| V 22 Mearim | 8-54 | 3-8-55 |
| V 23 Purus | 6-11-54 | 4-55 |
| V 24 Solimões | 24-11-54 | 1955 |

CORVETTES (continued)



Imperial Marinheiro (V 15)

1971

D: 911 tons (960 fl) S: 15 kts Dim: 55.72 × 9.55 × 3.6

A: 1/76.2-mm DP -4/20-mm AA (I \times 4)

M: 2 Sulzer diesels; 2 props; 2,160 hp Fuel: 135 tons diesel Man: 60 tot.

Remarks: Oceangoing tug design. Were intended to be convertible for minesweeping or minelaying. V 15 is used as a submarine tender. Officially designated "vedettes" and used in district patrols and in support of the 200-mile economic zone. Sister *Iparanga* (V 17) stricken 1983.

♦ 3 U.S. Sotoyomo class — former auxiliary ocean tugs Bldr: Gulfport Boiler & Welding Works, Port Arthur, Texas

| | Laid down | L | In serv. |
|----------------------------|-----------|---------|----------|
| R 21 Tritão (ex-ATA 234) | 3-3-45 | 7-5-45 | 11-12-45 |
| R 22 TRIDENTE (ex-ATA 235) | 21-3-45 | 19-5-45 | 3-12-45 |
| R 23 Triunfo (ex-ATA 236) | 10-4-45 | 6-6-45 | 3-12-45 |

D: 570 tons (835 fl) S: 13 kts Dim: 43.59 (41.00 pp) × 10.31 × 4.01

A: 2/20-mm AA (I \times 2)

M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp

Electric: 120 kw Fuel: 171 tons Range: 16,500/8 Man: 49 tot.

Remarks: Purchased 16-3-47 (R 23: 22-4-47). Now used to patrol 200-n.m. economic zone; armament possibly enhanced. To be replaced by three oilfield supply tugs purchased while building, 1985.

PATROL BOATS AND CRAFT

♦ 6 Piratini-class patrol boats Bldr: Ast. Ilha das Cobras, Rio

| | In serv. | | In serv |
|----------------------------|----------|--------------------------|---------|
| P 10 PIRATINI (ex-PGM 109) | 30-11-70 | P 13 Parati (ex-PGM 119) | 7-71 |
| P 11 Pirajá (ex-PGM 110) | 1-71 | P 14 PENEDO (ex-PGM 120) | 9-71 |
| P 12 PAMPEIRO (ex-PGM 118) | 3-71 | Р 15 Роті (ех-РСМ 121) | 10-71 |



Penedo (P 14)

1985

D: 105 tons (fl) **S:** 18.0 kts (15.5 sust.) **Dim:** 28.95 × 6.1 × 1.55

A: 1/81-mm mortar with 12.7-mm mg atop — 2/12.7-mm mg (I \times 2)

M: 4 Cummins VT-12M diesels; 2 props; 1,100 hp

Electric: 40 kw Range: 1,000/15; 1,700/12 Man: 2 officers, 14 men

Remarks: These patrol craft are based on the 95-foot WPBs of the U.S. Coast Guard and were funded by the U.S.

♦ 10 or more U.S. Swift Mk I patrol craft

R 61, R 62, R 63, R 64, etc.

D: 22.5 tons (fl) S: 22 kts Dim: 15.3 × 4.55 × 1.1 A: 1/12.7-mm mg

M: 2 G.M. 12V71 TI diesels; 2 props; 850 hp

Range: 400/22 Man: 6 tot.

Remarks: Employed by naval police and port captains. Six ordered 16-1-81 from DM-Commercio, Importação & Maintenção de Producto Nauticas. Earlier units built in U.S., transferred under AID program.

RIVER PATROL SHIPS

♦ 0 (+3) new-construction river patrol ships

| | Bldr. | Laid down | L | In serv. |
|-------------------|----------------------|-----------|-------|----------|
| P Porto Esperanca | Ars. de Marinha, Rio | 14-1-85 | 2 4 2 | |
| P N | * * * | 1986 | | |
| P N | 96 (47.4) | 1987 | | |

D: 270 tons (380 fl) **S:** 12 kts **Dim:** 49.33 (45.57 pp) × 8.45 × 1.40 **A:** . . . **M:** 2 diesels; 2 props; . . . hp

Man: 8 officers, 54 men

Remarks: Replaces program for ships named Cascaval and Jararaca, announced 1981.

All for use on Paraguay River; second two to build at private yards. Will have a helo deck and can carry 2 LCVP.

♦ 3 Roraima class Bldr: MacLaren, Niteroi

L In serv. L In serv.
P 30 RORAIMA 9-11-72 21-2-75 P 32 AMAPA 9-3-73 1-76
P 31 RONDÔNIA 10-1-73 3-12-75



Rondônia (P 31)

Brazilian Navy, 1983



Amapa (P 32)

1985

D: 340 tons (365 fl) **S:** 14.5 kts **Dim:** $46.3 \times 8.45 \times 1.37$ **A:** 1/40-mm AA — 6/12.7-mm mg (I \times 6) — 2/81-mm mortars **Electron Equipt:** 3/navigational radars **M:** 2 M.A.N. V6V16/18 TL diesels; 2 props; 1,824 hp

Range: 6,000/11 Man: 9 officers, 54 men

REMARKS: In Amazon Flotilla. Carry one LCVP.

♦ 2 Pedro Teixeira class—

| | Bldr | L | In serv. |
|---------------------|----------------------|---------|----------|
| P 20 Pedro Teixeira | Ilha das Cobras, Rio | 11-6-72 | 17-12-73 |
| P 21 Raposo Tavares | Ilha das Cobras, Rio | 11-6-72 | 17-12-73 |



Pedro Teixeira (P 20) — note hangar offset to starboard

1985

D: 690 tons (fl) **S:** 16 kts **Dim:** 63.55 × 9.71 × 1.70

A: 1/40-mm AA — 6/12.7-mm mg (I \times 6) — 2/81-mm mortars — 1/SAH-11 helicopter

Electron Equipt: Radar: 2/navigational

M: 2 MEP-M.A.N. V6V16/18 TLS diesels; 2 props; 3,840 hp

Range: 6,800/10 Man: 6 officers, 72 men

1 old river monitor

U 17 PARNAIBA

RIVER PATROL SHIPS (continued)



Parnaiba (U 17)

1976

D: 620 tons (720 fl) S: 12 kts Dim: $55.0 \times 10.1 \times 1.6$ A: 1/76.2-mm DP—2/47-mm—2/40-mm AA (I \times 2)—6/20-mm AA (I \times 6) M: 2 sets triple-expansion reciprocating steam; 2 props; 1,300 hp Boilers: 2/3-drum Fuel: 90 tons Range: 1,350/10 Man: 90 tot.

REMARKS: In Mato Grosso Flotilla. Was to be replaced by Cascavel and Jararaca.

MINE WARFARE SHIPS

Note: Two mine countermeasures ships were reported ordered 7-83 from Verolme Estaleiros Reunidos do Brazil. No further data available.

 6 German Schütze-class (Type 340a) patrol minesweepers ing and Rasmussen, Lemwerde, West Germany

| | L | In serv. | | L | In serv. |
|------------------|---------|----------|----------------|--------|----------|
| M 15 ARATU | 27-5-70 | 5-5-71 | M 18 ARACATUBA | 1971 | 13-12-72 |
| M 16 Anhatomirim | 4-11-70 | 30-11-71 | M 19 Abrolhos | 7-5-74 | 16-4-75 |
| M 17 ATALAIA | 14-4-71 | 13-12-72 | M 20 Albardão | 9-74 | 21-7-75 |



Anhatomirim 1972

D: 241 tons (280 fl) S: 24 kts Dim: $47.44 \times 7.16 \times 2.4$ A: 1/40-mm AA M: 4 Maybach diesels; 2 Escher-Wyss vertical cycloidal props; 4,500 hp Electric: 120 kw plus 340 kw sweep generator Fuel: 22 tons Range: 710/20 Man: 39 tot.

Remarks: Four ordered 4-69, two 11-73. Fitted for magnetic, mechanical, and acoustic minesweeping. Wooden hulls. A new series of minesweepers is planned.

AMPHIBIOUS WARFARE SHIPS

Note: Long-range plans call for acquisition of two new landing ships to replace those listed.

♦ 1 U.S. De Soto County-class tank landing ship Bldr: Avondale, New Orleans

G 26 Duque de Caxias (ex-Grant County, LST 1174) L In serv.

D: 4,164 tons (7,800 ft) S: 16 kts Dim: 135.7 (129.8 wl) × 18.9 × 5.3

A: 2/76.2-mm DP (II × 1) Electron Equipt: Radar: 1/SPS-21 M: 4 Fairbanks-Morse 38D 8% × 12 diesels; 2 CP props; 13,900 hp Electric: 900 kw Range: 13,000/10 Man: 11 officers, 164 men

Remarks: Transferred 15-1-73; purchased 12-17-78. Can carry 700 men. Air-conditioned. Tank deck 88-m long. Four LCVP in davits; can carry four causeways (pontoon sections). Platform for helicpter. Stülcken 60-ton lift gear reported added forward in place of 4/76.2-mm. Mk 51 Mod. 2 GFCS for guns.

• 1 U.S. LST 542-class tank landing ship Bldr: Bethlehem, Hingham, Mass.

G 28 Garcia D'Avila Laid down L In serv. (ex-Outagamie County, LST 1073)

D: 1,490 tons light (4,100 fl) S: 11.6 kts Dim: $100.0\times15.25\times4.29$ A: 8/40-mm AA (II \times 2, I \times 4)

M: 2 G.M. 2-278A diesels; 2 props; 1,700 hp Electric: 300 kw

Remarks: Loaned 25-5-71; purchased 1-12-73. Beaching displacement: 2,336 tons. Carries 2 LCVP.

♦ 3 U.S. LCU 1610-type landing craft Bldr: Navy Yard, Rio, 1974-78 L 10 Guarapari L 11 Timbau L 12 Camboriu



Guarapari (L 10)

1978

D: 200 tons (396 fl) S: 11 kts Dim: 41.0 × 8.42 × 2.0 A: 3/12.7-mm mg.

M: 2 G.M. 12V71 diesels; 2 props; 1,000 hp Range: 1,200/8

Remarks: Typed EDCG—"Embarcação de Desembarque de Carga Generales." Can carry 172 tons cargo. The uncompleted *Tramandai* (L 13) was scrapped in 1983.

♦ 28 LCVP Built in Japan, 1959-60

♦ 15 EDVP Built in Brazil, 1971

Dim: 11.0 × 3.2 × 0.6 (fwd), 1.0 (aft) M: Brazilian Scania diesel

Remarks: Glass-reinforced plastic construction. Can carry 36 men with full pack or one jeep with trailer and 17 men or 1/105-mm howitzer or an anti-tank gun and 18 men. At least one U.S. LCM (6) design landing craft is also in service.

HYDROGRAPHIC AND OCEANOGRAPHIC SHIPS

 1 U.S. Robert D. Conrad-class oceanographic ship Pt. Pleasant, West Virginia (In serv. 8-2-65)

Bldr: Marietta Co.,

H 41 ALMIRANTE CAMARA (ex-Sands, T-AGOR 6)



Almirante Camara (H 41)

1974

D: 1,020 tons (1,370 fl) S: 13.5 kts Dim: 63.7 (59.7 pp) × 12.2 × 4.9 mean

Electron Equipt: Radar: 1/RCA CRM-N1A-75

M: 2 Caterpillar D-378 diesels, electric drive; 1 prop; 1,000 hp

Electric: 850 kw (plus 620 kw) Fuel: 211 tons Range: 10,000/12

Man: 8 officers, 18 men, 15 oceanographers

Remarks: Loaned 1-7-74. An auxiliary 620-hp gas turbine powers a small electric maneuvering propeller for stationkeeping purposes at extremely low rpm; also has bow-thruster. Has echo-sounders capable of measuring 11,000-meter depths.

 1 Antarctic exploration support ship serv. 10-57)
 Bldr: Aalborg Vaerft, Denmark (In

H 42 BARÃO DE TEFFÉ (ex-Thala Dan)

D: . . . S: 12 kts Dim: 75.14 (65.54 pp) × 13.77 × . . . M: 1 Burmeister & Wain 7-cyl. diesel; 1 CP prop; 1,970 hp Electric: 680 kw Fuel: 457 tons Man: 50 tot.

Remarks: 2,183 grt/2,164 dwt. Purchased 5-82 from J. Lauritzen in lieu of the Royal Navy ice patrol ship, *Endurance*. Conversion completed 8-82 as antarctic support ship, including helicopter deck over stern (added overall length not included above). Ice-reinforced-hulled former cargo ship.

• 2 Sirius class

| | Bldr | Laid down | L | In serv. |
|--------------|---------------------|-----------|----------|----------|
| H 21 SIRIUS | Ishikawajima, Tokyo | 12-56 | 30-7-57 | 1-1-58 |
| H 22 Canopus | Ishikawajima, Tokyo | 12-56 | 20-11-57 | 15-3-58 |

HYDROGRAPHIC AND OCEANOGRAPHIC SHIPS (continued)



Canopus (H 22)

D: 1,463 tons (1,900 fl) S: 15 kts Dim: 77.9 × 12.03 × 3.7 M: 2 Sulzer 7T6-36 diesels; 2 CP props; 2,700 hp Range: 12,000/11 Fuel: 343 tons Man: 102 tot.

Remarks: 1 SAH-11 helicopter, 1 LCVP, 3 small survey craft. Fully equipped. Armament removed.

♦ 6 wooden-hulled hydrographic boats Bldr: Bormann, Rio de Janeiro

| | In serv. | | In serv. |
|-------------------------------------|----------|-----------------|----------|
| H 11 Paraibano | 10-68 | H 15 Itacurussá | 3-71 |
| H 12 Rio Branco | 10-68 | Н 16 Самосім | 1971 |
| H 14 Nogueira Da Gama (ex-Jaceguai) | 3-71 | H 17 Caravelas | 1971 |



Nogueira da Gama (H 14)

197

D: 32 tons (50 fl) S: 11 kts Dim: 16.0 × 4.6 × 1.3
M: 2 G.M. 6-71 diesels; 2 props; 330 hp Range: 600/11 Man: 2 officers, 9 men
REMARKS: In Amazon Flotilla.

♦ 1 former sail-training ship

Bldr L In serv. H 10 Almirante Saldanha Vickers, Barrow 19-12-33 6-34



Almirante Saldanha (H 10)

1975

D: 3,325 tons (3,825 fl) S: 11 kts Dim: 93.6 × 15.8 × 5.5 M: 1 Sulzer diesel; 1 CP prop; 1,400 hp Range: 12,000/10 Fuel: 390 tons Electric: 550 kw Man: 210 tot.

Remarks: Former 4-masted schooner, refit completed in 7-61 as an oceanographic research ship and for training. Refitted again for zooplankton research, completed 6-80; received NAVSAT and Omega navigation systems, new current and salinity meter systems.

♦ 3 Argus-class coastal survey ships

| | Bldr | L | In serv. |
|-------------|----------------------|---------|----------|
| H 31 Argus | Ars. de Marinha, Rio | 6-12-57 | 29-1-59 |
| H 32 ORION | Ars. de Marinha, Rio | 5-2-58 | 11-6-59 |
| H 33 Taurus | Ars. de Marinha, Rio | 7-1-58 | 23-4-59 |

D: 250 tons (350 fl) S: 15 kts Dim: 44.67 (41.14 pp) × 6.50 × 2.80 M: 2 Caterpillar DT 379 diesels; 2 props; 1,200 hp Fuel: 35 tons Range: 3,000/. . . Endurance: 20 days Man: 34 tot.

Remarks: Based on the Portuguese Azevia-class gunboat. H 32 modernized in 1973/74, with new propulsion machinery, auxiliaries, and electronic equipment.



Taurus (H 33)

1985

♦ 1 fisheries research oceanographic ship

Bldr: INACE, Fortaleza

U 15 Suboficial Oliveira (In serv. 22-5-81)

D: 108 tons (120 fl) **Dim:** 35.5 × 6.7 × . .

M: 2 diesels; . . . props; 740 hp Range: 1400/8 Man: 10 tot.

Remarks: For use by the Naval Research Institute in "Capo Frio Project" for shrimp cultivation.

AUXILIARY SHIPS

♦ 1 cadet training ship, modified Mk 10 frigate

Bldr: Laid down L In serv.
U 30 Brasil Ast. Ilha das Cobras, Rio 18-9-81 23-9-83 1987



Brasil (U 30)

Official drawing

D: 2,380 tons (3,400 fl) S: 18 kts Dim: $131.25\times13.52\times4.21$ mean (fl) A: 2/40-mm Bofors L70 AA (I \times 2) — 1/Lynx helicopter

Electron Equipt: Radar: 2/navigational

M: 2 Ishikawajima Brazil-Pielstick 6 PC. 2 L400 diesels; 2 props; 7,800 hp Range: 7,000/15 Man: 26 officers, 69 petty officers, 120 men, 200 cadets

Remarks: Uses hull of the Mk 10 frigate design, but has less powerful plant and simpler weapons and electronics. Electro-optical GFCS only. Fin stabilizers. Will replace Custódio de Mello (U 26) for training cadets from Naval and Merchant Marine Academies. Master CIC with 3 satellite training CICs, navigational training compartment for 40 trainees, 2 other classrooms. A planned 76-mm OTO Melara Compact mount forward has not been installed.

• 4 Custódio de Mello class transports (1 used as training ship)

| | Bldr | Laid down | L | In serv. |
|------------------------|---------------------|-----------|----------|----------|
| U 26 Custódio de Mello | Ishikawajima, Tokyo | 12-53 | 10-6-54 | 1-12-54 |
| G 16 Barroso Pereira | Ishikawajima, Tokyo | 12-53 | 7-8-54 | 1-12-54 |
| G 21 ARY PARREIRAS | Ishikawajima, Tokyo | 12-55 | 24-8-56 | 29-12-56 |
| G 22 Soares Dutra | Ishikawajima, Tokyo | 12-55 | 13-12-56 | 23-3-57 |



Custódio de Mello (U 26)

G. Gyssels, 6-84

D: 4,800 tons (8,600 fl) S: 16 kts Dim: 119.2 (110.4 pp) \times 16.0 \times 6.1 A: 2/76.2-mm DP (I \times 2) — 2/20-mm AA (I \times 2) — U 26: 4/76.2-mm DP (I \times 4) Electron Equipt: Radar: U 26: 1/navigational, 1/SPS-4 — others: 2/navigational M: GT; 2 props; 4,800 hp Boilers: 2 Foster-Wheeler; 350°C Fuel: 880 tons Man: 118 tot. Can carry 1,972 troops (497 normal)

Remarks: 4,200 dwt/4,879 grt. Living spaces mechanically ventilated and partially air-conditioned. Custódio de Mello, used as training ship, is to be replaced by Brasil (U 30). Others have a helicopter platform aft, can carry 497 troops, and are occasionally used in commercial service; all have 425m³ refrigerated cargo space.

AUXILIARY SHIPS (continued)

• 1 U.S. Aristaeus-class small repair ship

Bldr: Maryland DD, Baltimore

G 24 BELMONTE (ex-Helios, ARB 12, ex-LST 1127)

Laid down L In serv. 23-11-44 14-2-45 26-2-45



Belmonte (G 24)

D: 2,030 tons (4,100 fl) **S:** 9 kts **Dim:** 100.0 $(96.3 \text{ wl}) \times 15.25 \times 3.36$ **A:** 8/40-mm AA $(IV \times 2)$ **M:** 2 G.M. 12-567A diesels; 2 props; 1,800 hp **Electric:** 600 kw **Fuel:** 584 tons **Range:** 6,000/9

Remarks: 1-62; purchased 28-12-67. 1/60-ton winch crane, 2/10-ton booms. Used mainly as a transport.

♦ 0 (+2) fleet supply ships Bldr: Lenin SY, Gdansk, Poland (In serv. 1971)

G 29 Almirante Gastão Motta (ex-Itatiuga) N. . . (ex-Itacpuca)

D: approx. 12,000 tons (fl) **S:** 20.5 kts **Dim:** 161.02 (150.02 pp) × 22.99 × 9.72 **A:** . . . **Electron Equipt:** Radar: . . .

M: 1 Sulzer diesel; 1 prop; 18,400 hp

Man: 25 officers, 36 petty officers, 153 men

Remarks: Cargo vessel purchased 1984 from Lloydd Brasileiro Steamship Co. Under conversion 1985—. . . at Rio de Janeiro Naval Arsenal to act as fleet supply ship to replace *Marajo* (G 27). Will carry cargo fuel and water, as well as ammunition for underway transfer. Helicopter deck and facilities for two Sea King. Extensive medical and dental facilities. Total accommodations: 214. Second unit purchased 5-85.

♦ 1 fleet replenishment oiler Bldr: Ishikawajima do Brasil, Rio

Laid down L In serv. G 27 Marajo 13-12-66 31-1-68 22-10-68



Marajo (G 27)

U.S. Navy, 1985

D: 16,000 tons (fl) S: 13.6 kts Dim: 137.1 (127.69 pp) × 19.22 × 7.35 M: 1 Sulzer GRD 68 diesel; 8,000 hp Cargo capacity: 7,200 tons Fuel: 700 tons Electric: 1,200 kw Range: 9,200/14.5 Man: 80 tot.

Remarks: 6,600 grt/11,119 dwt. Two liquid replenishment stations per side.

♦ 1 river oiler

G 17 POTENGI Bldr: Papendrecht, Holland (L: 16-3-38)

D: 600 tons **S:** 10 kts **Dim:** $54.5 \times 7.5 \times 1.8$

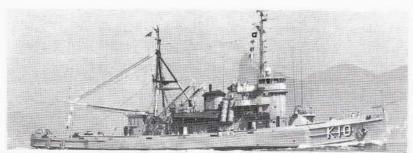
M: 2 diesels; 2 props; 550 hp Range: 600/8 Man: 20 tot.

Remarks: In Mato Grosso Flotilla. Cargo capacity: 450 tons

• 1 U.S. Penguin-class submarine rescue ship

Bldr Laid down L In serv.

K 10 Gastão Moutinho (ex-Skylark, ASR 20; ex-Yustaga, ATF 165)



Gastão Moutinho (K 10)

D: 1,780 tons (2,140 fl) S: 14.5 kts

Dim: $62.48 (59.44 \text{ wl}) \times 11.96 \times 4.72$ A: 2/20-mm AA $(I \times 2)$

Radar: 1/SPS-5 M: 4 G.M. 12-278A diesels; electric drive; 1 prop; 3,000 hp

Electric: 400 kw Fuel: 301 tons Range: 15,000/8

Remarks: Begun as an *Achomawi*-class fleet tug. Purchased 30-6-73. Has rescue bell, salvage equipment, pumps, 4 pontoons, etc. Often employed as a hydrographic survey ship and as a diving tender.

♦ 2 oceangoing tugs Bldr: Sumitomo Heavy Industries, Japan (Both L: 1976)

R 24 Almirante Guilhem (ex-. . .) R 25 Almirante Guillobel (ex-. . .)

D: 2,400 tons (fl) S: 14 kts Dim: 63.15 × 13.40 × 4.50 A: . . . M: 2 G.M. 20-645 ET diesels; 2 CP props; 7,200 hp Electric: 550 kw Fuel: 670 tons Man: 40 tot.

Remarks: Purchased 1980 from Superpesa Maritime Transport, Ltd., and commissioned 22-1-81. Former oilfield supply tugs. 84 ton bollard pull. 525-hp bow-thruster.

• 1 lighthouse and buoy tender

H 34 Graça Aranha Elbin, Niteroi end 1970 23-6-74 9-9-76



Graça Aranha (H 34)

1976

D: 1,253 tons (2,300 fl) **S:** 13 kts **Dim:** $75.57 \times 13.0 \times 3.71$ **M:** Diesel; 1 CP prop; 2,000 hp; 1 bow-thruster **Man:** 101 tot.

Remarks: Telescoping helicopter hangar for one SAH-11. Two LCVP carried as supply lighters.

YARD AND SERVICE CRAFT

1 large yard tug

R 14 Laurindo Pitta Bldr: Vickers, 1910, rebuilt 1969

D: 514 tons **S**: 11 kts **Dim**: $39.04 \times 7.77 \times 4.6$

M: 2 sets reciprocating steam; 2 props; . . . hp Man: 33 tot.

 4 Comandante Marriog-class yard tugs serv. 1981)
 Bldr: Turn-Ship Ltd., U.S.A. (In

R 14 COMANDANTE DIDIER R 17 TENENTE MAGALHAES R 15 COMANDANTE MARRIOG R 18 CABO SCHRAM

D: 115 tons (fl) S: 10 kts Dim: 19.8 × 7.0 × 2.0 M: 2 G.M. diesels; . . . props; 900 hp Man: 6 tot.

♦ 6 yard tugs Bldr: Holland Nautic Yard, Haarlem (In serv. 1953)

R 31 Audaz R 33 Guarani R 35 Passo De Patria R 32 Centauro R 34 Lamego R 36 Voluntario

D: 220 tons (fl) S: 11 kts Dim: 27.6 × 7.2 × 3.1 M: 1 Krupp Womag diesel; 765 hp Man: 12 tot.

♦ 3 Isaias de Noronha-class tugs (1972-74)

R. . . ISAIAS DE NORONHA R. . . D.N.O.G.

R. . . TENIENTE LAHMEYER

D: 200 tons (fl) Dim: 47.0 × . . . × . . .

REMARKS: Latter pair reported as only 100 tons, 32.0 m o.a.

♦ 1 personnel and stores transport Bldr: Embrasa, Itajai, Santa Caterina (L: 29-8-74)

R 47 Sargento Borges

D: 108.5 tons S: 10 kts Dim: 28.0 × 6.5 × 1.5

M: 2 diesels; 2 props; 480 hp Cargo: 106 passengers Range: 400/10

◆ 4 Rio Pardo-class harbor passenger ferries Bldr: Inconav Niteroi Ship-builders (In serv. 1975-76)

U 40 Rio Pardo U 42 Rio Chui U 41 Rio Negro U 43 Rio Oiapoque

YARD AND SERVICE CRAFT (continued)

D: 150 tons S: 14 kts Dim: 35.38 × 6.5 × 1.9 M: 2 diesels; 2 props; 1,096 hp Cargo: 400 passengers

Bldr: G. deVries Leutsch, Amsterdam ♦ 6 Rio Doce-class river transports (In serv. 1956)

U 20 Rio Doce U 22 Rio Formoso U 24 Rio Turvo U 23 RIO REAL U 25 Rio Verde U 21 Rio Das Contas

D: 150 tons (200 fl) S: 14 kts Dim: 36.6 × 6.5 × 2.1 M: 2 Sulzer diesels; 2 props; 450 hp Cargo: 600 passengers Range: 700/14 Man: 10 tot.

Bldr: Brazil (1965-67) ♦ 7 Anchova-class personnel launches

R 57 Acará R 55 Arenque R 56 ATUM R 54 ANCHOVA R 59 ARUANA R 60 ARGENTINA R 58 AGULHA

D: 11 tons (13 fl) S: 25 kts Dim: 13.0 × 3.8 × 1.2 M: 2 diesels; 280 hp Cargo: 12 passengers Range: 400/20 Man: 3 tot.

• 1 command ship

G 15 Paraguassu (ex-Guarapuava)

D: 285 tons **S**: 12 kts **Dim**: $40.0 \times 7.0 \times 1.2$ M: Diesel; 1 prop Range: 2,500/10

Remarks: Former river transport ship, bought in 1971, refitted for the Mato Grosso Flotilla, and used as a river buoy tender and flagship.

♦ 1 river transport/despatch boat for the Mato Grosso Flotilla

G. . . PIRAIM (In serv. 1982)

D: 91.5 tons (fl) S: 7 kts Dim: 25.0 × . . . × 0.97 M: 2 MWM diesels; 2 props; 400 hp Range: 700/7 Electric: 60 kVA Man: 2 officers, 13 men, 2 civil pilots

• 2 small service transports

TENENTE FABIO TENENTE RAUL

D: 55 tons S: 10 kts Dim: 20.28 × 5.1 × 1.2 M: Diesel; 135 hp Cargo capacity: 22 tons Range: 350

São Francisco Dos Santos (1964), Ubirajara Dos Santos (1968), Operatão Luis Leal (1968), Miguel Dos Santos (1968), Aprendiz Lédio Conceição (1968)

REMARKS: Last two for torpedoes.

◆ 1 yard oiler (purchased 1973)

R 11 MARTINS DE OLIVIERA (ex-Gastão Moutinho)

D: 588 tons **S:** 10.3 kts **Dim:** $49.4 \times 7.0 \times 2.4$

- ◆ 1 vard oiler: ANITA GARIBALDI no data
- ♦ 2 water tankers (L; 1957)

R 43 Paulo Afonso R 42 Itapura

D: 485.3 tons Dim: 42.8 × 7.0 × 2.5 M: 1 diesel Cargo: 389 tons

♦ 3 miscellaneous small water tankers

R 38 Doctor Gondim R 40 Guairia R 41 Iguaçu

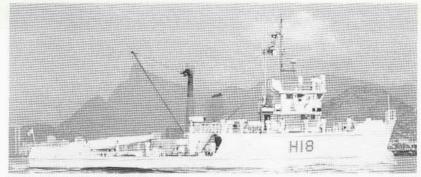


Iguaçu (R 41)

G. Gyssels, 1981

♦ 5 Commandante Varella class navigational aid tenders

| | Bldr: | Laid down | L | In serv. |
|-----------------|---------------------------|-----------|---------|----------|
| H 18 Comandante | Ast. Ilha das Cobras, Rio | 1-8-78 | 18-9-81 | 30-9-82 |
| VARELLA | | | | |
| H 19 COMANDANTE | Sao João de Nilo SY | | | |
| Menhaes: | | | | |
| H 20 TENENTE | Sao João de Nilo SY | | | |
| CASTELHO | | | | |
| H TENENTE | Sao João de Nilo SY | | | 1985 |
| Boanerges | | | | |
| H 26 FAROLEIRO | (**(**)**** | | | |
| Mario Seixax | | | | |



Comandante Varella (H 18)

D: 300 tons light (440 fl) S: 12 kts Dim: 37.51 (34.5 pp) × 8.60 × 2.56 M: 28-cyl. diesels; 2 props; 1,300 hp Range: 2,880/12 Man: 22 tot.

8 130-ton navigational aid tenders

H 13 Mestro João Dos Santos H 30 FAROLEIRO NASCIMENTO H 24 Castelhanos H. . . CABO BRANCO H. . . CABO CALLANHAR H 27 FAROLEIRO AREAS H 28 FAROLEIRO SANTANA H. . . CABO FRIO

REMARKS: No data available. Also in use are H 21 Sirius and captured U.S. fishing poachers Sea Horse and Condor.

• 2 river hospital shops Bldr: Naval Arsenal, Rio de Janeiro

Laid down U 18 OSWALDO CRUZ 1981 11-7-83 31-5-84 U 19 CARLOS CHAGAS 1982 16-4-84 12-84

D: 500 tons (fl) S: 9 kts Dim: 47.18 (45.0 pp) × 8.45 × 1.75

M: 2 diesels; 2 props; 714 hp Range: 4,000/9 Electric: 420 kVA Man: 4 officers, 21 men, 6 doctor/dentists, 15 health

REMARKS: Intended to serve in Amazon Flotilla with the similar Roraima-class gunboats. Helo deck for one AS 350. Two sickbays (6 total beds), operating theater, two clinics, dental laboratory, x-ray facilities.

• 3 Voga Picada-class training craft Bldr: CARBRASMAR, Rio de Janeiro (All in serv. 17-1-84)

U 31 Voga Picada U 32 Rosca Fina U 33 Leva Ariba



Rosca Fina (U 32)

1985

D: 50 tons (fl) **S:** 11 kts **Dim:** $18.60 \times 4.70 \times 1.20$ M: 1 M.W.M. diesel; 1 prop; 650 hp Range: 200/11 Man: 5 crew + 11 trainees

♦ 3 Aspirante Nascimento-class training craft Bldr: Embrassa Itajai, Santa Catarina (In serv. 1980-81)

U 10 ASPIRANTE NASCIMENTO U 11 Guardia Marinha Jansen

U 12 Guardia Marinha Brito



Aspirante Nascimento (U 10)

1985

BRAZIL (continued)

YARD AND SERVICE CRAFT (continued)

D: 130 tons (fl) S: 10 kts Dim: 28.0 (25.0 pp) × 6.50 × 1.80 A: 1/12.7-mm mg M: 2 M.W.M. D232V12 diesels; 2 props; 650 hp Range: 700/10

Man: 2 officers, 10 men, 24 midshipmen

Remarks: Used for navigation and seamanship training at the Naval Academy. Also used for training are sail yacht Cisne Branco and ex-U.S. fishing boat Night Hawk.

FLOATING DRY DOCKS

• 1 U.S. AFDL 34 class Bldr: V.P. Loftis (In serv. 10-44)

G 27 CIDADE DE NATAL (ex-U.S. AFDL 39, ex-ARDC 6)

Remarks: Loaned 10-11-66; purchased 28-12-77. Concrete construction. 17.7-m clear width inside, 105.2-m length on blocks.

Bldr: Chicago Bridge & Iron, Cal. (In serv. 12-43) 1 U.S. AFDL 1 class

G 26 ALMIRANTE JERONIMO GONCALVES (ex-Goiaz, ex-AFDL 4, ex-AFD 4)

Lift capacity: 1,000 tons Dim: 60.96 × 19.51 × 1.04 (light)

Remarks: Loaned 10-11-66; purchased 28-7-77. Steel construction. 13.7-m clear width inside, 56.4-m length on blocks.

 1 U.S. ARD 12 class Bldr: Pacific Bridge, Alameda, Cal. (In serv. 11-43)

G 25 Afonso Pena (ex-Ceara, ex-ARD 14)

Lift capacity: 3,500 tons Dim: 149.86 × 24.69 × 1.73 (light)

Remarks: Loaned 1963; purchased 28-12-77. Steel construction, pointed ship-type bow. 18.0-m clear with inside, 118.6-m length on blocks.

Bldr: Bushell Lyons Ironwks, Tampa, Fla. ♦ 1 U.S. dry dock companion craft (In serv. 22-3-45)

. . . (ex-YFN 903)

D: 170 tons (590 fl) Dim: 33.53 × 10.36 × 2.74

Remarks: Converted non-self-propelled cargo barge. Loaned 1963; purchased 28-12-77.

BRUNEI DARUSSALEM

Personnel: (1985): 446 (including 42 officers and "Special Boat Squadron" of 6 officers) and 114 men for river duties

MERCHANT MARINE (1984): 2 ships - 853 grt

• 3 guided-missile patrol boats Bldr: Vosper Thornycroft, Singapore

In serv. P 02 WASPADA 7-78 P 03 Pejuang 3-78 1979 22-6-78 P 04 SETERIA 1979

D: 150 tons (fl) S: 32 kts Dim: 36.88 (33.53 pp) × 7.16 × 1.8 A: 2/MM 38 Exocet SSM - 2/30-mm AA (II × 1) - 2/7.62-mm mg (I × 2) Electron Equipt: Radar: 1/Decca AC 1229-EW: Decca RDL intercept

M: 2 MTU 20V538 TB91 diesels; 2 props; 9,000 hp (7,500 sust.)

Fuel: 16 tons Range: 1,200/14 Man: 4 officers, 20 men



Waspada (P 02)

G. Arra, 1984



Seteria (P 04) - note different bridge

G. Arra, 1984

Remarks: P 02 has enclosed upper bridge (open on other two) and facilities for training. All have Sperry Sea Archer fire control system and two 50-mm rocket-flare launchers. The 30-mm mount is BMARC/Oerlikon GCM-BO1

♦ 3 patrol craft Bldr: Vosper, Singapore

D: 35 tons (fl) S: 25 kts Dim: 25.24 × 5.8 × 1.60

A: 2/20-mm AA (II × 1) -2/7.62-mm mg

M: 2 diesels; 2 CP props; 3,072 hp (plus 1/200-hp cruise diesel, 8 kts)

Man: 5 officers, 8 men

Remarks: Built on speculation 1979, purchased 1980. Steel hull, aluminum superstructure. Replace Masna (P 11), Saleha (P 12), and Norain (P 13), discarded 1978-79.

3 Periwa-class patrol craft

| | Bldr | L | In serv. |
|----------------|-------------------|---------|----------|
| P 14 PERIWA | Vosper, Singapore | 5-74 | 9-9-74 |
| P 15 Pemburu | Vosper, Singapore | 30-1-75 | 17-6-75 |
| P 16 PENYARANG | Vosper, Singapore | 20-3-75 | 24-6-75 |



Periwa (P 14)

1974

D: 30 tons (38.5 fl) S: 32 kts Dim: 21.7 \times 6.1 \times 1.2 A: 2/20-mm AA (I \times 2) — 2/7.62-mm mg Electron Equipt: Radar: Decca RM 916 (P 14, 15: Decca 1216A) M: 2 MTU 12V331 TC81 diesels; 2,700 hp Range: 600/20; 1,000/16

3 Bendahara-class river patrol craft

P 21 BENDAHARA P 23 KEMAINDERA P 22 MAHARAJALELA

D: 10 tons (fl) S: 20 kts Dim: 14.1 × 3.6 × 0.9

A: 2/7.62-mm mg Electron Equipt: Radar: Decca RM 616 M: 26-71 G.M. diesels; 334 hp Range: 200/18 Man: 6 tot.

♦ 2 Loadmaster-class landing craft

Bldr: Cheverton, Cowes, U.K.

L 31 Damuan (5-76) L 32 Puni (2-77)

D: 64.3 tons (light) S: 8.5 kts Dim: 22.86 × 6.1 × 1.07 Electron Equipt: Radar: Decca RM 1216 M: 2 G.M. 6-71 diesels; 2 props; 348 hp Cargo: 30 tons Range: 300/8.5; 1,000/6 Man: 8 tot.

Remarks: L 31: 19.8-m overall, 60-tons light.

♦ 3 FPB 512-class landing craft Bldr: Rotork, U.K.

S 24 (In serv. 11-80) S 25 (In serv. 5-81) S 26 (In serv. 5-81)

D: 8.8 tons (fl) S: 27 kts Dim: 12.7 × 3.2 × . . .

A: 3/7.62-mm mg (I × 3) Electron Equipt: Radar: 1/Decca

060 Range: 100/12 M: 2 Ford Mermaid diesels; 2 Castoldi waterjets; 430 hp Man: 3 tot.

Remarks: Glass-reinforced plastic hulls, bow ramps. For patrol and transport duties.

BRUNEI DARUSSALEM (continued)

♦ 25 small armed river craft for the Special Boat Squadron

A: 1/7.62-mm mg M: 100 hp

 3 support tenders Bldr: Cheverton, Cowes, U.K. (In serv. 1982)

BURONG NURI N. . .

D: 23 tons (fl) S: 12 kts Dim: 17.0 × 4.3 × . . .

M: 2 G.M. diesels, 2 props; 400 hp

Remarks: Used as tugs, target tugs, diving tenders or for anti-pollution duties. Glassreinforced plastic construction.

MARINE POLICE

Bldr: Vosper Thornycroft, Singapore, 1978-80 4 patrol craft

TENANG ABADI N..... N.....

D: 14 tons (fl) S: 28 kts Dim: 18.0 × 4.88 × 0.79 A: Machine guns M: 2 MTU diesels; 2 water jets

Remarks: Glass-reinforced plastic hulls. The second pair was ordered early in 1979.

BULGARIA

People's Republic of Bulgaria

Personnel: approx. 4,000 men

Merchant Marine (1984): 197 ships - 1,282,962 grt (tankers: 18 - 311,735 grt)

2 Soviet Romeo class

13 SLAVA 14 POBIEDA

D: 1,330/1,700 tons S: 15.5/13 kts Dim: 77.0 × 6.7 × 4.9

A: 8/533-mm TT (6 fwd, 2 aft) — 14 torpedoes or 24 mines

Electron Equipt: Radar: 1/Snoop Plate - Sonar: MF active; passive array

M: 2/2,000-hp diesels; electric drive; 3,000 hp Range: 7,000/5 (snorkel) Endurance: 45 days Man: 60 tot.

Remarks: Transferred 1971-72. Replaced two Whiskey class with same names. Can dive to 300 meters.

FRIGATES

2 Soviet Riga class — Transferred 1957 and 1958

15 Druzkiy 16 Smelyy

D: 1,260 tons (1,480 fl) S: 30 kts Dim: 91.0 × 10.2 × 3.2 (4.4 sonar)

A: 3/100-mm DP - 3/533-mm TT - 2/RBU-1200 ASW RL (V × 2) - 1/MBU-600 Hedgehog

Electron Equipt: Radar: 1/Slim Net, 1/Neptune, 1/Sun Visor—IFF: 2/Square Head, 1/High Pole

Sonar: 1/MF hull-mounted-EW: 2/Watch Dog intercept

M: 2 sets GT; 2 props; 20,000 hp Boilers: 2; 27 kg/cm², 360°C

Range: 550/28; 2,000/13 Electric: 450 kw Fuel: 230 tons Man: 180 tot.

CORVETTES

◆ 3 Soviet Poti class—Transferred 12-75 (In serv. 1961-68)

41 N. . . 42 N. . . 43 N. . .

D: 400 tons (fl) S: 38 kts Dim: 59.4 × 7.9 × 2.0 (mean hull)

A: 2/57-mm AA (II × 1) — 2/RBU-6000 rocket launchers — 4/400-mm ASW TT Electron Equipt: Radar: 1/Spin Trough, 1/Strut Curve, 1/Muff Cob

IFF: 2/Square Head, 1/High Pole B

Sonar: 1 high frequency - EW: 2 Watch Dog

M: CODAG: 2 M503A diesels of 4,000 hp each plus 2 gas turbines of 20,000 hp each; 2 props plus waterjet thrust

Range: 520/37; 4,500/10 Man: .

REMARKS: One is named Khabri.

GUIDED-MISSILE, PATROL, AND TORPEDO BOATS

3 Soviet Osa-II-class guided-missile patrol boats — Transferred 1978, 1982

D: 190 tons (240 fl) S: 35 kts Dim: 38.6 × 7.6 × 2.0 mean

A: 4/SS-N-2B Styx - 4/30-mm AA (II × 2) Man: 30 tot.

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt-IFF: 2/Square Head, 1/High Pole B

M: 3 Type M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25

3 Soviet Osa-I-class guided-missile patrol boats—Transferred 1970-71.

103 112 113

D: 175 tons (215 ft) **S:** 36 kts **Dim:** $38.6 \times 7.6 \times 1.8$

A: 4/SS-N-2A Styx - 4/30-mm (II × 2) Man: 30 tot.

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt - IFF: 2/Square Head, 1/High Pole B

M: 2 Type M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25

♦ 7 Soviet Shershen-class torpedo boats—Transferred 1970

D: 150 tons (170 fl) S: 45 kts Dim: 34.7 × 6.7 × 1.5

A: 4/533-mm TT-4/30-mm AA (II × 2) Man: 20 tot.

Electron Equipt: Radar: 1/Drum, 1/Drum Tilt

M: 3 Type M503A diesels; 3 props; 12,000 hp Range: 460/42; 850/30

♦ 6 Soviet SO-1 class—Transferred 1963

44 45 46

D: 190 tons (215 fl) S: 28 kts Dim: 42.0 × 6.1 × 1.9 (3.2 over sonar) A: 4/25-mm AA (II × 2) - 4/RBU-1200 ASW RL (V × 4) - 2/d.c. rack-Electron Equipt: Radar: 1/Pot Head-IFF: 1/Dead Duck, 1/High Pole M: 3 Type 40D diesels; 3 props; 7,500 hp Range: 340/28; 1,900/16 Man: 30 tot.

6 Soviet Zhuk-class patrol boats—Transferred 1980-81

511-516

D: 60 tons (fl) S: 34 kts Dim: 24.0 × 5.0 × 1.8 (props)

A: 4/14.5-mm mg (II × 2) Man: 12 tot.

M: 2 Type M50F diesels; 2 props; 2,400 hp Range: 700/30; 1,100/15

MINE WARFARE SHIPS

♦ 4 Soviet Vanya-class minesweepers—Transferred 1971-72

D: 220 tons (245 fl) S: 16 kts Dim: 40.2 × 7.9 × 1.7

A: 2/30-mm AA (II × 1)

Electron Equipt: Radar: 1/Don-2-IFF; 1/Square Head, 1/High Pole B

M: 2 diesels; 2 props; 2,200 hp Range: 10/2,400 Man: 30 tot.

♦ 2 Soviet T-43-class minesweepers

D: 500 tons (570 fl) S: 15 kts Dim: 58.0 × 8.4 × 2.3

A: 4/37-mm AA (II × 2) — 8/14.5-mm AA (II × 4) — mines Man: 65 tot.

Electron Equipt: Radar: 1/Ball End, 1/Neptune

IFF: 1/Square Head, 1/High Pole A

M: 2 Type 9D diesels; 2 props; 2,200 hp Range: 2,000/14; 3,200/10

Remarks: Transferred 1953. The two Bulgarian T 43s are early versions of the class with flush bridge faces. They are the only known units of that configuration with tripod, rather than pole, masts. One is named Vukov Klanac.

◆ 4 Soviet Yevgenya-class inshore minesweepers—Transferred 1977-. . .

D: 80 tons (90 fl) **S:** 11 kts **Dim:** $26.2 \times 6.1 \times 1.5$ **A:** 2/14.5-mm AA (II \times 1) Electron Equipt: Radar: 1/Spin Trough — IFF: 1/High Pole B M: 2 diesels; 2 props; 600 hp Range: 300/10 Man: 12 tot.

Remarks: Plastic hull. Equipped with towed television minehunting and marking system effective to 30-meter depths. Probably replaced PO 2 class. Pendant numbers sighted include 51 and 52.

AMPHIBIOUS WARFARE SHIPS

◆ 23 Soviet Vydra-class landing craft—Transferred 1970-79

D: 600 fl S: 11 kts Dim: 54.9 × 7.6 × 2.0

Electron Equipt: Radar: 1/Spin Trough M: 2 diesels; 2 props; 1,040 hp Range: 2,700/10 Cargo: 220 tons

AUXILIARIES AND SERVICE CRAFT

 1 Mesar-class replenishment oiler Bldr: Bulgaria (In serv. 1980)

11 ANLENE



Anlene (AOR 11)

BULGARIA (continued)

AUXILIARIES AND SERVICE CRAFT (continued)

D: 3,500 (fl) S: 20 kts Dim: 97.5 × 13.2 × 5.0 A: 4/30-mm AA (II × 2) M: 2 diesels; 2 props; 12,000 hp

REMARKS: Deployed to Mediterranean 1980 with the two Rigas. Over-the-stern underway refueling; also has dry stores cargo. Unusually fine hull lines for an oiler.

♦ 1 Soviet Moma-class survey ship/buoy tender Bldr: Poland (1977)

D: 1,260 tons (1,540 fl) **S:** 17 kts **Dim:** $73.3 \times 10.8 \times 3.8$ Electron Equipt: Radar: 2/Don-2-IFF: 1/High Pole A M: 2 Sgoda-Sulzer 6 TD 48 diesels; 2 CP props; 3,600 hp Endurance: 35 days Range: 8,700/11 Man: 56 tot.

♦ 1 East German Type-700 salvage tug — Transferred 4-64

JUPITER

D: 700 tons (792 fl) **S:** 13 kts **Dim:** $44.7 \times 10.7 \times 3.9$ M: 2 diesels; 2 props; 1,680 hp Range: 4,000/12 Man: 39 tot.

♦ 1 inshore survey craft: (In serv. 1973)

General Vladimir Zaimov - D: 600 tons (fl), 48.0 m o.a., 12 kts.

- ♦ 1 small degaussing tender No. 317
- ♦ 3 Type 024 yard oilers (In serv. 1956)

D: 450 tons (fl) **S:** 9 kts **Dim:** $46.0 \times 6.1 \times 2.5$

- ♦ 2 small tugs
- 2 diving tenders—Nos. 333 and 337
- 6 torpedo retrievers
- 6 barracks barges
- 2 fireboats

FRONTIER POLICE

The Bulgarian Frontier Police operate 12 ex-naval PO 2-class launches and 2 25-knot patrol craft.

The Socialist Republic of the Union of Burma

Personnel: approx. 7,000, including reserves and naval infantry

Merchant Marine (1984): 105 ships - 108,384 grt (tankers: 5 - 3,435 grt)

CORVETTES

♦ 1 U.S. PCE 827 class Bldr: Willamette Iron & Steel, Portland, Ore.

Laid down In serv. 7-12-42 15-5-43 10-8-44

41 YAN TAING AUNG (ex-Farmington, PCR 894) **D:** 640 tons (903 fl) **S:** 15 kts **Dim:** 56.24 (54.86 wl) \times 10.08 \times 2.87 (hull)

A: 1/76.2-mm DP Mk 26—6.40-mm AA (II × 3)—8/20-mm AA (II × 4)—1/Mk 10 Hedgehog - 2/Mk 6 d.c. launcher - 2/d.c. rack

Electron Equipt: Radar: 1/SPS-5

Sonar: 1/QCU-2

M: 2 G.M. 12-567A diesels; 2 props; 1,800 hp **Electric:** 240 kw **Fuel:** 125 tons **Range:** 9,000/10 **Man:** 100 tot.

Remarks: Transferred 18-6-55.

♦ 1 U.S. Admirable-class former fleet minesweeper Bldr: Willamette Iron & Steel, Portland, Ore.

Laid down In serv. 42 YAN GYI AUNG (ex-Creddock, MSF 356) 10-11-43 22-7-44 18-12-45

D: 650 tons (905 fl) **S**: 14 kts **Dim**: 56.24 (54.86) × 10.08 × 2.87 (hull)

A: 1/76.2-mm DP Mk 26-2/40-mm AA (II \times 1) -4/20-mm AA (II \times 2) -1/Mk10 hedgehog — 2/Mk 6 d.c. launcher — 2/d.c. rack

Electron Equipt: Radar: 1/SPS-5 Sonar: QCU-2

M: 2 Busch-Sulzer Type 539 diesels; 2 props; 1,710 hp

Electric: 280 kw Fuel: 140 tons Range: 9,300/10 Man: 100 tot.

Remarks: Minesweeping gear removed prior to transfer 21-3-67.

PATROL BOATS

♦ 2 (+2) PGM 412 class Bldr: Burma Naval Dockyard, Rangoon

PGM 412 (In serv. 1983) PGM. . . (In serv. 1984) PGM. . . PGM. . .

D: 128 tons (fl) S: 16 kts Dim: 33.5 × 6.7 × 2.0

A: 2/40-mm AA (I × 2) Range: 1,400/14

Man: 17 tot.

M: 2 Deutz SBA 16MB216 LLKR diesels; 2 props; 2,720 hp

• 6 U.S. PGM 43 class Bldrs: 401-404: Marinette Marine, Marinette, Wisc.: 405, 406: Peterson Bldrs, Sturgeon Bay, Wisc.

| | In serv. | | In serv. |
|-----------------|----------|-----------------|----------|
| 401 (ex-PGM 43) | 8-59 | 404 (ex-PGM 46) | 9-59 |
| 402 (ex-PGM 44) | 8-59 | 405 (ex-PGM 51) | 6-61 |
| 403 (ex-PGM 45) | 9-59 | 406 (ex-PGM 52) | 6-61 |

D: 100 tons (141 fl) **S**: 17 kts **Dim**: $30.81 \times 6.45 \times 2.30$ A: 1/40-mm AA -4/20-mm AA $(II \times 2) - 2$ mg $(I \times 2)$ Electron Equipt: Radar: EDO 320 (405, 406: Raytheon 1500)

M: 8 G.M. 6-71 diesels; 2 props; 2,040 hp Fuel: 16 tons

Range: 1,000/16 Man: 17 tot.

Note: The last two U.S. Coast Guard 83-ft design patrol boats, PGM 102 and 110, were discarded 1984-85; PGM 102, 103, 105, 106, and 108 were stricken in 1983.

RIVERINE PATROL VESSELS

♦ 2 improved 301 class Bldr: Similak, Burma (In serv. 1967)

Y 311 Y 312

D: 250 tons **S:** 14 kts **Dim:** $37.0 \times 7.3 \times 1.1$ A: 2/40-mm AA (I × 2) — 2/20-mm AA (I × 2) M: 2 Mercedes-Benz diesels; 2 props; 1,000 hp

Bldr: Dawbon DY, Rangoon (In serv. 1961) • 2 Nawarat class

NAWARAT NAGAKYAY



D: 400 tons (450 fl) **S**: 12 kts **Dim**: 49.7 × 8.23 × . . . A: 2/25-pounder guns (Army ordinance) - 2/40-mm AA M: 2 Paxman-Ricardo diesels; 2 props; 1,160 hp Man: 43 tot.

♦ 10 Y 301 class Bldr: Uljanik, Pula, Yugoslavia (In serv. 1957-60) Y 301-Y 310



Y 301 class

D: 120 tons **S**: 13 kts **Dim**: $32.0 \times 7.25 \times 0.8$ A: 2/40-mm AA (I × 2) — 2/20-mm AA (I × 2)

M: 2 Mercedes-Benz diesels; 2 props; 1,100 hp Man: 29 tot.

♦ 6 U.S. PBR Mk II-class patrol craft Bldr: Uniflite, Bellingham, Washington (In serv. 1978)

PBR 211-216

D: 8.9 tons (fl) **S:** 24 kts **Dim:** $9.73 \times 3.53 \times 0.81$ A: 3/12.7-mm mg (II × 1, I × 1) — 1/60-mm mortar Electron Equipt: Radar: 1/Raytheon 1900 M: 2 G.M. GV53N diesels; 2 water jets; 430 hp Range: 150/23 Man: 4-5 tot.

AUXILIARIES

♦ 10 30- to-40-ton river boats

Bldr: Burma (In serv. 1951-52)

◆ 25 30- to-40-ton river boats

Bldr: Yugoslavia (In serv. 1965)

BURMA (continued) AUXILIARIES (continued)

♦ 1 hydrographic survey ship

Bldr: Tito SY, Belgrade, Yugoslavia

THU TAY THI (In serv. 1965)



Thu Tay Thi

D: 1,100 tons (1,271 fl) **S:** 15 kts **Dim:** 62.21 (56.80 pp) \times 11.00 \times 3.60 M: 2 MB820 Db diesels; 2 props; 1,710 hp Man: 99 tot.

Remarks: Helicopter platform. Carries 2 inshore survey craft. Can be armed with 1/40-mm AA, 2/20-mm AA (I × 2).

Bldr: Netherlands (In serv. 1957) ♦ 1 inshore survey boat

YAY Bo D: 108 tons Man: 25 tot.

Bldr: Yokohama Yacht, Japan (L: 3-69) • 4 landing craft

AIYAR MAUNG AIYAR MAI AIYAR MIN THA MEE AIYAR MIN THAR



Aiyar Maung

Yokohama Yacht, 1969

D: 250 tons (fl) **S:** 10 kts **Dim:** $38.25 \times 9.14 \times 1.4$

M: 2 Kubota diesels; 2 props; 560 hp Cargo: 100 tons Man: 10 tot.

Bldr: Yokohama Yacht, Japan (In serv. 1978) • 2 landing craft

SINDE HTONBO

D: 220 tons (fl) S: 10 kts Dim: 29.5 × 6.72 × 1.4

M: 2 Kubota diesels; 2 props; 300 hp Cargo: 50 tons, 30 passengers

♦ 1 U.S. LCU 1610-class utility landing craft Bldr: Southern SB, U.S.

AIYAR LULIN (ex-U.S. LCU 1626)

D: 190 tons (390 fl) S: 11 kts Dim: 41.0 × 9.0 × 2.0

A: 2/20-mm AA (I × 2) M: 4 G.M. 6-71 diesels; 2 props; 1,200 hp

Remarks: Used as a transport. Transferred on completion, 6-67.

Bldr: Japan (In serv. 1967) ♦ 1 diving and repair tender

YAN LONG AUNG D: 520 tons

Remarks: Formerly a torpedo retriever and torpedo boat tender.

PEOPLE'S PEARL AND FISHERIES MINISTRY

♦ 3 Danish "Osprey"-class fisheries protection ships

IN DAW Frederikshavn SY 5-80 Frederikshavn SY 25-3-82 In Ma 25-3-82 IN YA Frederikshavn SY

D: 385 tons (505 fl) S: 20 kts

Dim: $49.95~(45.80~\text{pp}) \times 10.5~(8.8~\text{wl}) \times 2.75$

A: 2/40-mm AA (II × 1) — 1/20-mm AA Electric: 359 kVA

M: 2 Burmeister & Wain "Alpha" 16V23L-VO diesels; 2 CP props; 4,640 hp

Range: 4,500/16 Man: 15 or more tot.

Remarks: Sister to Danish Havornen, armed in Burma. Helicopter hangar and flight deck aft. Rescue launch recessed into inclined ramp at stern. Second pair arrived in

♦ 3 "Swift"-class fisheries patrol boats

Bldr: Vosper, Singapore (1980-81)

421 422 423

D: 96 tons (fl) **S**: 27 kts **Dim**: $32.3 \times 7.2 \times$..

A: 2/40-mm AA (I × 2) - 2/20-mm AA (I × 2) - 2/7.62-mm mg

M: 2 MTU 12V331 TC81 diesels; 2 props; . . . hp Range: 1,800/24 Man: 15 tot.

♦ 6 "Carpentaria"-class fisheries patrol boats (1979-80)

Bldr: deHavilland, Australia



Burmese "Carpentaria"-class patrol boat on trials

G. Gyssels, 1980

D: 27 tons (fl) **S:** 27 kts **Dim:** $16.0 \times 5.0 \times 1.2$ A: 2/7.62-mm mg (I × 2) Electron Equipt: Radar: 1/Decca 110 M: 2 G.M. 12V71 TI diesels; 2 props; 1,120 hp Range: 700/22 Man: 8 tot.

Remarks: Ordered 12-78. Sisters in Indonesian and Solomon Islands forces. Aluminum construction.

CAMEROON

United Republic of Cameroon

Personnel (1985): 350 total

MERCHANT MARINE (1984): 48 ships - 74,373 grt

NAVAL AVIATION: One Dornier 128-6 Maritime Patrol aircraft with MEL Marec radar ordered 1983.

GUIDED-MISSILE PATROL BOATS

1 French P 48S class Bldr: Soc. Française Contructions Navales (SFCN), Villeneuve-la-Garenne

Laid down

12-81

L

In serv.

22-10-82 8-10-83



Bakassi

BAKASSI

SFCN, 1983

CAMEROON (continued)

GUIDED-MISSILE PATROL BOATS (continued)

D: 270 tons (308 fl) S: 26 kts Dim: 50.0 (47.0 pp) \times 7.45 \times 2.35 A: 8/MM 40 Exocet (IV \times 2) - 2/40-mm AA (I \times 2) Electron Equipt: Radar: 1/Decca TM1229C, 1/Decca RM1230 M: 2 SACM 195V16 CZSHR diesels; 2 props; 6,400 hp Electric: 280 kw Range: 2,000/16 Man: 6 officers, 21 petty officers, 12 men

Remarks: Ordered 14-12-80; enlarged version of P 48 class. Two CSEE Naja optronic sights for 40-mm AA, with RADOP ranging system using the navigation radars. Racal CANE 100 (Command and Navigation Equipment) fitted.

PATROL BOATS

♦ 1 French P 48 class Bldr: SFCN, Villeneuve-la-Garenne

L'AUDACIEUX 10-2-75 31-10-75 11-5-76



L'Audacieux

D: 250 tons (fl)
 S: 18.5 kts
 Dim: 47.5 (45.5 pp) × 7.1 × 2.5
 A: 2/40-mm AA (I × 2)
 M: 2 MGO AGO V12 CZSHR diesels; 2 props; 4,200 hp
 Electric: 100 kw
 Range: 2,000/15
 Man: 4 officers, 30 men

♦ 2 Chinese Shanghai-II class — Transferred 7-76

101 Cap Cameroon 102 Man o'War Bay

D: 122 tons (135 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55

A: 4/37-mm AA (II \times 2) -4/25-mm AA (II \times 2)

Electron Equipt: Radar: 1/Pot Head Endurance: 7 days

M: 2 M50F diesels of 1,200 hp, 2 12D6 diesels of 910 hp; 4 props; 4,220 hp

Range: 750/165 Electric: 39 kw Man: 25 tot.

PATROL CRAFT

♦ 2 small coastal surveillance craft

LE VALEUREUX Bldr: Chantiers Navals de l'Estérel, Nice (In serv. 19-11-70)



Le Valeureux

Estérel, 1970

D: 45 tons S: 25 kts Dim; 26.8 × 4.97 × 1.55 A: 2/20-mm AA M: 2 G.M. 12V71 diesels; 2 props; 960 hp Man: 1 officer, 8 men

QUARTIER MAÎTRE ALFRED MOTTO Bldr: A.C.R.E., Libreville, Gabon (In serv. 12-11-73)

D: 96 tons (fl) S: 15.5 kts Dim: $29.1 \times 6.2 \times 1.85$ (aft) A: 2/20-mm AA — 2 mg M: 2 Baudoin diesels; 2 props; 1,290 hp Man: 2 officers, 15 men

AMPHIBIOUS WARFARE CRAFT

◆ 1 LCM Bldr: Carena, Abidjan, Ivory Coast (In serv. 1973)

D: 57 tons (fl) S: 9 kts Dim: 17.5 × 4.28 × 1.3 M: 2 Baudoin diesels; 490 hp

♦ 5 LCVP-type landing craft Bldr: A.C.R.E., Libreville, Gabon

SOUELLABA INDÉPENDANCE REUNIFICATION MANOKA MACHTIGAL

D: 11 tons S: 10 kts

SERVICE CRAFT

♦ 2 10-ton harbor launches

SANAGA RIMBIA

♦ 6 FAC 408-class Seatrucks Bldr: Rotork Marine, Poole, U.K. (In serv. 1978)

D: 2 tons **S:** 10 to 35 kts **Dim:** $7.37 \times 2.74 \times ...$ **M:** 1 or 2 inboard/outboard motors

Remarks: For patrolling rivers and lagoons. Two similar 12-m craft were delivered 1-82 by Tanguy Marine, France, along with one 17-m "Seatruck."

Note: Customs or police forces also operate 12 Type 650 and 800 launches of 3.5 tons delivered 1977-1982 by Chantiers Plascoa, Cannes.

CANADA

The Canadian Armed Forces are completely unified. There are six operational commands: Mobile Command, Maritime Command, Air Transport Command, Air Defense Command, Training Command, and Material Command. The Maritime Command is in charge of the naval ships, the ship-based aircraft, and all of the units of the former Maritime Air Command (RCAF). Its principal role is ASW, but it can also be called upon to transport men and equipment for the Mobile Command. The new government elected in 1984 has promised to once again separate the three services.

Personnel (1984): about 18,450 men active, plus 3,000 in the Naval Reserve, and 7,400 civil employees.

Merchant Marine: (1984): 1,310 ships - 3,449,496 grt (tankers: 62-439,130 grt)

Naval Aviation: Made up of ship-based ASW helicopters, maritime patrol aircraft, and ASW aircraft, formerly carrier-based but now maintained at land bases.

Primary strength as follows:

— 32 ASW CHSS 2 (CH-124A) Sea King helicopters (see U.S.A. section), armed with Mk 44 or Mk 46 torpedoes and AQS-13 sonar. Several are used in logistics service aboard the replenishment oilers. All are based on the East Coast, at Shearwater, Nova Scotia. Problems with stress cracking kept many grounded during 1982, now corrected. Being fitted with Emerson Calypso acoustic processors.

Canada signed a contract on 25-7-76 with Lockheed for the manufacture of 18 CP-140 Aurora maritime patrol aircraft, based on the U.S. Navy's P-3 Orion. The first plane was delivered 28-5-80, with the remaining arriving by 3-81. The Canadian version of the plane is fitted not only for reconnaissance, ASW, and electronic warfare, but also for detecting atmospheric and maritime pollution and for analyzing oil spills at sea. It has a crew of twelve. The Aurora has the Orion's A-NEW system, based on the miniaturized Univac ASQ-114 computer, which can store 65,000 words of 30 bits and has a retrieval time of 4 microseconds. There are 36 launching chutes for dropping active and passive sonobuoys and racks for 120 reserve sonobuoys. Other principal systems are: 2ASN-84 inertial navigation computers; Doppler radar; tactical recorder flight-control director; tactical data link system; FLIR (Forward-Looking Infrared); SLAR (Side-Looking Airborne Radar) antennas; detectors for lasers; a low-light television pod.



CP-140 Aurora, number 140101

1980

—15 CS-2F Tracker former carrier-based ASW aircraft, now used as land-based maritime surveillance aircraft, with additional fuel in the former weapons bay. Omega navigation systems were added during 1979-80, and a wing-mounted camera pod is installed. Twelve are based at Shearwater, Nova Scotia, while the 3 Pacific Coast units also perform ship target service duties, along with several CT-33A Silver Starjet trainers. Some 8-12 Canadian Challenger 600/601 corporate jets were ordered 1985 to supply naval and land forces with EW training.

Warships in Service As Of 1 January 1984

Tons

Main armament

• 3 submarines

3 OBERON

1964-66

L

2,070 (surf.) 8/533-mm TT

WARSHIPS (continued)

| ♦ 4 destroyers | | | |
|--------------------|---------|-------|--|
| 4 Iroquois | 1970-71 | 3,551 | 1/127-mm DP, 2 Can. Sea Sparrow, ASW weapons, 2 Sea King helicopters |
| ♦ 16 (+6) frigates | | | |
| 0 (+6) Halifax | | 3,471 | 8/Harpoon, Sea Sparrow SAM, 1/57-mm DP, ASW weapons, 1 helicopter |
| 2 Annapolis | 1961-63 | 2,400 | 2/76.2-mm DP, ASW weapons, 1 Sea King helicopter |
| 4 Mackenzie | 1961-62 | 2,380 | 4/76.2-mm DP, ASW weapons |
| 4 Restigouche | 1954-57 | 2,390 | 2/76.2-mm DP, ASROC, other ASW weapons |
| 6 St. Laurent | 1952-56 | 2,260 | 2/76.2-mm DP, ASW weapons, 1 Sea King helicopter |

WEAPONS AND SYSTEMS

A. MISSILES

Surface-to-air missiles. The Canadian Navy has adopted the short-range surface-to-air NATO Sea Sparrow for its four *Iroquois*-class destroyers. The missile is designed to attack aircraft or missiles flying at a low altitude or at a transonic speed. Its characteristics are:

Length: 3.660 m. Diameter: 0.200 m. Wingspan: .020 m. Weight: 204 kg.

Speed: Mach 3.5. Practical antiaircraft range: 8,000 to 10,000 m.

The launching system, on the *Iroquois* class, designed by Raytheon Canada, is made up of two loaders and two launchers. The launchers are fixed one to port and one to starboard, perpendicular to the axis of the ship. They are retractable, can be trained and elevated, and are housed in the structure forward of the bridge. Each launcher has four missiles ready to be fired. A new Raytheon vertical-launch system for Sea Sparrow underwent trials aboard *Huron* in 2-81 at Roosevelt Roads, Puerto Rico, and will be used on the *Halifax* class.

Canada is purchasing the U.S. Harpoon missile for use by CP-140 Aurora aircraft, submarines, and surface ships. In 1984, 34 RGM-84D shipboard versions were ordered.

B. GUNS

The following guns are currently in use:

57-mm Bofors SAK Mk 2. Single mount, to be used on the *Halifax* class. See Swedish section for data.

76.2-mm Mk 22. Twin DP (U.S. Mk 34 mount) mounted behind a g.r.p. spray shield. Length: 50 calibers. Muzzle velocity: 822 m/s.

Maximum firing rate: 50 rounds per minute per barrel.

Arc of elevation: 115° to +85°.

Maximum effective antiaircraft range: 4,000 to 5,000 m.

Fitted on the St. Laurent, Restigouche, Mackenzie, and Annapolis class of frigates.

76.2-mm Mk 6. Twin barrel, automatic (British model).

Length: 70 calibers. Muzzle velocity: . . . m/s. Maximum firing rate: 60 rounds per minute per barrel.

Maximum effective antiaircraft range: 5,000 m.

Installed forward on the Restigouche and Mackenzie classes of frigates.

127-mm OTO-Melara (see Italy section)
Installed on the *Iroquois*-class destroyers.

C. ASW WEAPONS

• Depth-charge and torpedo launchers

- British Mk 10 Limbo triple-barreled mortar on destroyers and frigates.
- -U.S. ASROC on 4 Restigouche-class frigates.
- U.S. Mk 32 ASW triple torpedo tubes on all destroyers and frigates.

♦ Torpedoes

- —U.S. Mk 44 and 46 ASW torpedoes aboard ships, and on Sea King helicopters and maritime patrol aircraft.
- U.S. Mk 37 aboard submarines, in Northrop NT37C improved version.
- -U.S. Mk 48 mod. 4 on submarines; 48 ordered 1985

D. ELECTRONICS

• Radars:

- —SPS-12 long-range air search.
- SPS-49(v), U.S. (Raytheon) 2-D air-search radar on Halifax class.
- SPS-501 long-range air search (version of Dutch LWO-3) installed in *Iroquois*-class destroyers. Uses LWO-3 antenna, SPS-12 transmitter.
- SPS-503, Canadian-made radar using the Plessey AWS-4's antenna, for 8 modernized frigates
- -SPS-10 and Sperry Mk 2 navigation/surface search.

- —SPQ-2D combination search (Italian radar) installed in the Iroquois class.
- —Sea Giraffe HC 150, Ericsson surface search on the Halifax class.

· Sonars

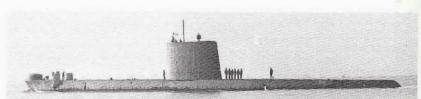
- SQS-501 for detection of submarines lying on the sea bottom.
- SQS-503 hull-mounted MF.
- SQS-504 towed MF, Type 503 transducer.
- —SQS-505 hull-mounted LF installed in the Iroquois and Halifax classes.
- SQS-505 towed LF installed in the Iroquois class (SQA-502 hoist). SQS-505 TASP
 with digital acoustic processing and SHINPADS display tested in an Iroquois-class
 ship in 1984.
- —SQR-501 CANTASS towed passive linear hydrophone array for the *Halifax* class; uses "wet end" of U.S. AN/SQR-18A system with Canadian receiver/processor.

SUBMARINES

Note: In 1985-86, the Canadian Government is studying proposals from France, Italy, the Netherlands, the U.K., Sweden, and two from West Germany for replacement submarines for the *Oberon* class. The requirement is initially for four submarines, and an 8- or 12-boat fleet is also being looked at. Some or all may be built in Canada. Armament will include Sub-Harpoon missiles and U.S. Mk 48 torpedoes; low manning levels, quiet operation, and long endurance are required. The first submarines would replace the *Oberons* as they are stricken 1992-94.

3 British Oberon class

| | Bldr | Laid down | L | In serv. |
|------------------------|------------------|-----------|---------|----------|
| SS 72 OJIBWA (ex-Onyx) | H.M. DY, Chatham | 27-9-62 | 29-2-64 | 23-9-65 |
| SS 73 Onandaga | H.M. DY, Chatham | 18-6-64 | 25-9-65 | 22-6-67 |
| SS 74 OKANAGAN | H.M. DY, Chatham | 25-3-65 | 17-9-66 | 22-6-68 |



Ojibwa (SS 72) - after modernization

L. & L. Van Ginderen, 12-82

D: 1,610/2,070/2,410 tons Dim: 17.5/15 kts

Dim: 89.92(87.45 pp) × 8.07 × 5.48

A: 8/533-mm TT (6 fwd, 2 aft) — 22 NT37C torpedoes — see remarks

Electron Equipt: Radar: 1/1006

Sonar: British: 1/2007, 1/Krupp-Atlas CSU3-41

M: 2 Admiralty Standard Range 16VVS-AS21 diesels, diesel-electric drive; 2 props; 6,000 hp

Remarks: The *Ojibwa* was begun under the name of *Onyx* for the Royal Navy and transferred while still under construction. The living spaces have been modified for Canadian weather conditions. Being modernized under "SOUP" (Submarine Operational Update Program), beginning in 1980 with SS 72; getting Singer-Librascope Mk 1 Mod. 0 fire-control system using Sperry UYK-20 computer and new sonar suit with the Krupp-Atlas CSU3-41 active-passive system for the passive array, and an active transducer in the sail replacing the original Type 187, 197, and 719 sets. The Type 2007 long-range passive search array will be retained. Able to employ U.S. Mk 48 torpedoes and Sub-Harpoon missiles. SS 72 completed 6-82, SS 73 in 1984, and SS 74 in 1986. Two Thorn-EMI Pertel low light-level t.v. periscopes in each. The aft tubes can only be employed for NT37C torpedoes.

DESTROYERS

• 4 Iroquois DDH 280 class

| | Bldr | Laid down | L | In serv. |
|--------------------|--------------------------|-----------|----------|----------|
| DDH 280 Iroquois | Marine Industries, Sorel | 15-1-69 | 28-11-70 | 29-7-72 |
| DDH 281 Huron | Marine Industries, Sorel | 15-1-69 | 3-4-71 | 16-12-72 |
| DDH 282 ATHABASCAN | Davie S.B., Lauzon | 1-6-69 | 27-11-70 | 30-11-72 |
| DDH 283 Algonquin | Davie S.B., Lauzon | 1-9-69 | 23-4-71 | 30-9-73 |



Iroquois (DDH 280) - with new TACAN

DESTROYERS (continued)



Iroquois (DDH 280)

G. Gyssels, 3-85



Huron (DDH 281)

G. Arra, 1984

D: 3,551 tons (4,200 fl) **S:** 30/29 kts **Dim:** 128.92 (121.31 pp) × 15.24 × 4.42

A: 2/Canadian Sea Sparrow SAM syst. (IV \times 2; 32 AIM-7E missiles) — 1/127-mm OTO Melara DP — 1/Mk 10 Limbo ASW mortar (III \times 1) — 6/324-mm Mk 32 TT (III \times 2) — 2/Sea King ASW helicopters.

Electron Equipt: Radar: 1/navigational, 1/SP-501, 1/SPQ-2D; 2/WM-22 dir.

Sonar: 1/SQS-505, 1/SQS-505(VDS), 1/SQS-501 EW: WLR-1, ULQ-6 jammer—1/6-rail flare and chaff RL—2/Knebworth/Corvus chaff RL (VIII×2)— TACAN: URN-20 (DDH 280: URN-25)

M: COGOG: 2 FT 4A2 Pratt & Whitney gas turbines, 25,000 hp each, 2 Solar Mk FT 12H gas turbines, 3,700 hp each; 2 five-bladed CP props; 50,000 hp Electric: 2,750 kw Range: 4,500/20 Man: 27 officers, 258 men

Remarks: Two paired stacks, angled to avoid corrosion of the antennas by stack gases. Bear Trap positive-control helicopter landing system. Passive-tank anti-rolling system fitted to improve stability at low speeds. *Huron* tested the Raytheon vertical-launch Sea Sparrow SAM system in 2-81. U.S. WSC-3 SATCOMM capability added 1982; 2 OE-82 antennas. Have H.S.A. ASWDS computerized data display system. DDH 283 tested the AN/SAR-8 IRSTD (Infrared Search and Target Designation) system atop her pilothouse in 1984.

Modernization Notes: These ships are being updated under the TRUMP (Tribal Update and Modernization Program) under a design prepared by Litton Systems Canada. The first will commence reconstruction at Davie SB, Lauzon, Que., late in 1986, completing in 1988, and the last (DDH 281) will complete by 5-91. ASW systems are to be basically unchanged, except for removal of the Limbo mortar. The U.S. Mk 41 VLS (Vertical Launch System) for 32 Standard SM 2 Block II SAMS will replace



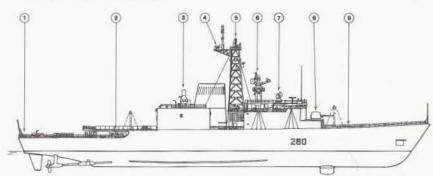
Iroquois (DDH 280) after modernization

Litton Canada, 1985

the 127-mm forward, while an OTO Melara 76-mm DP gun will be installed in the former Sea Sparrow magazine area. A Mk 15 CIWS (Vulcan-Phalanx) will be placed atop the hangar, and ASW torpedo stowage and handling will be improved. The 76-mm gun and Standard missiles will be controlled by a single H.S.A. STIR 1.8 fire-control illuminator/tracker. The LW-08 long-range air-search radar will be retained, supplemented by a DA-06 medium-range radar atop the mast. Harpoon antiship missiles are no longer planned to be carried. Plessey's Shield decoy RL (VI \times 2) will replace Knebworth-Corvus, and the CANEWS EW system (with Ramses jammer) will replace WLR-1. The SHINPADS command and control system will be added, as will the U.S. SLQ-25 Nixie torpedo decoy.

The cruise turbines will be replaced by two G.M. Allison 570KF gas turbines, each generating 6,394 shp, and the twin stacks will be integrated into a single, larger structure; yet to be decided is whether the boost engines will be replaced with G.E. LM-2500 gas turbines. A new 1,000-kw diesel generator will be fitted. An inertial

navigation system is planned.



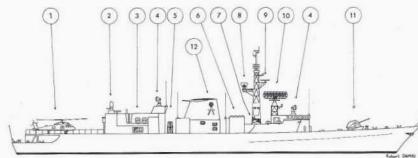
Iroquois as modernized
A.D. Baker III, 6-85
1. VDS housing
2. Triple Mk 32 ASW TT
3. Mk 15 CIWS 20-mm gatling
AA 4. URN-25 TACAN 5. DA-08 radar 6. LW-08 long-range search
radar 7. STIR 1.8 fire-control tracker/illuminator radar 8. 76-mm OTO Melara Compact DP
9. Standard SM-2 VLS launcher Ex-41

FRIGATES

♦ 0 (+6+6) Halifax, or "City" class

| | Bldrs | Laid down | L | In serv. |
|-------------------------|--------------------------------------|-----------|---|----------|
| FFH 330 HALIFAX | St. Johns SB, New Brunswick | 7-85 | | 11-89 |
| FFH 331 Vancouver | Marine Ind., Sorel, Que. | | | 9-90 |
| FFH 332 VILLE DE QUEBEC | St. Johns SB, New Brunswick | | | 9-90 |
| FFH 333 TORONTO | Marine Ind., Sorel, Que.* | | | 3-91 |
| FFH 334 REGINA | St. Johns SB, New Brunswick, Que. | | | 3-91 |
| FFH 335 Calgary | Marine Ind., Sorel, Que.* | | | 3-92 |

* To fit out at Versatile Vickers, Montreal



D: 3,471 tons (4, 254 fl) S: 29.2 kts (27 sust.)

Dim: 133.50(124.50 pp) × 14.80 × 4.64 (mean)

A: 8/Harpoon SSM (IV \times 2) — Sea Sparrow VLS syst. (VIII \times 4) — 1/57-mm Bofors SAK Mk 2 DP — 1/20-mm Mk 15 CIWS — 6/324-mm Mk 32 ASW TT(III \times 2) — 1/SH-60B Sea Hawk helicopter

Electron Equipt: Radar: 1/Raytheon 1629C nav., 1/Ericsson Sea Giraffe 150 HC search, 1/SPS-49 long-range air search, 2 H.S.A. STIR f.c.

Sonar: SQS-505 hull-mounted, SQR-501 CANTASS towed

array
EW: Ramses jammer, M.E.L. CANEWS intercept, 4/Shield
RL (VI × 4) — TACAN: URN-25

M: CODOG: 2 G.E. LM-2500 gas turbines/1 S.E.M.T.-Pielstick 20PA6-V280-BTC diesel (11,780 hp); 2 CP props; 50,000 hp

Electric: 4,880 kVA(4 M.W.M. TBO-602 V-16K diesel generator sets)
Fuel: 479 tons Range: 4,500/20 Man: 180 tot.(225 accommodations)

FRIGATES (continued)

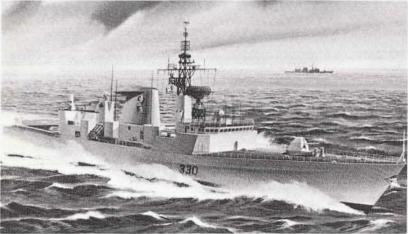
Remarks: First six ordered 29-7-83 from consortium of St. Johns Shipbuilding and Dry Dock, Paramax Electronics, and Sperry. Announced 19-11-84 that a second group of six are to be built. FFH 330 was to have been laid down 12-84, but program (first announced 22-12-77!) continues to experience design delays.

Helicopter to be employed not yet firm, may not be SH-60B. Will have Bear Trap helicopter recovery system. Fin stabilizers. The U.S./Canadian AN/SAR-8 IRSTD(Infrared Search and Target Designation) system is to be carried. SQR-501 CANTASS towed tactical passive hydrophone system uses the "wet end" of the U.S. SQR-18A TACTASS. Originally were to have only two 8-cell Sea Sparrow VLS, but this was doubled by 1984. Will have AN/SLQ-25 Nixie towed torpedo decoys and a bubbler noise-reduction system. The SHINPADS (Shipboard Integrated Processing And Display System) data system will be fitted.



Halifax (FFH 330) - official model

R.C.N., 1984



Halifax (FFH 330) - artist's rendering

R.C.N., 1984

Note: A "Destroyer Life Extension Program" (DELEX) was approved 7-8-80. All 16 older frigates are receiving: ADLIPS (Automated Data Link Processing System), hull and machinery overhaul and repair, new underwater telephones, the Mk 12 IFF system, secure UHF communications, and a new navigational radar. Additional features are being added to the various ships in proportion to their future value, with \$22 million per ship being spent on the 1964-vintage Annapolis class, down to only \$5 million for the St. Laurent-class ships, which, as the oldest, are the first to be worked on. Individual class DELEX features are listed in the Remarks sections.

2 Annapolis class

| | Bldr | Laid down | L | In serv. |
|-------------------|--------------------------|-----------|----------|----------|
| DDE 265 Annapolis | Halifax Shipyards Ltd | 7-60 | 27-4-63 | 19-12-64 |
| DDE 266 NIPIGON | Marine Industries, Sorel | 4-60 | 10-12-61 | 30-5-64 |

D: 2,400 tons (3,000 fl) S: 28 kts Dim: $113.1 \times 12.8 \times 4.4$ A: 2/76.2-mm DP Mk 33 (II \times 1) -1/Mk 10 Limbo mortar (III \times 2) -6/324-mm ASW TT (III × 2) Mk 32-1/Sea King helicopter

Electron Equipt: Radar: 1/nav. 1/SPS-503, 1/SPS-10, 1/fire control Sonar: 1/SQS-505, 1/SQS-504 VDS, 1/SQS-501 EW: CANEWS intercept, 4/Mk 36 SRBOC RL(VI × 4) — TACAN: URN-20



Annapolis (DDE 265) - prior to refit

G. Arra, 3-84

M: 2 sets English-Electric GT; 2 props; 30,000 hp

1985. Both on East Coast. To remain in service until 1994-96.

Boilers: 2 Babcock & Wilcox; 43.3 kg/cm2, 454°C Electric: 1,400 kw Range: 4,750/14 Man: 18 officers, 210 men

Remarks: Have Litton CCS-280 data system. Under DELEX will receive SPS-503 (CMR-1820) air-search radar with Plessey AWS-4 antenna, new EW system, firecontrol syst., and navigational radar; SQS-503 sonar replaced by SQS-505. SLQ-25 Nixie torpedo decoys added. Refits scheduled to commence: DDE 265 in 1984, 266 in

4 Mackenzie-class frigates

| | Bldr | Laid down | L | In serv. |
|----------------------|--------------------|-----------|---------|----------|
| DDE 261 MACKENZIE | Canadian-Vickers | 15-12-58 | 25-5-61 | 6-10-62 |
| DDE 262 SASKATCHEWAN | Victoria Machinery | 16-7-59 | 1-2-61 | 16-2-63 |
| DDE 263 YUKON | Burrard, Vancouver | 25-10-59 | 27-7-61 | 25-5-63 |
| DDE 264 Qu'Appelle | Davie S.B., Lauzon | 14-1-60 | 2-5-62 | 14-19-63 |



Saskatchewan (DDE 262) - with new navigation radar Cdr. G. Eldridge, R.C.N., 1983



Qu'appelle (DDE 264) - Mk 33, 76.2-mm/50-cal. forward

L. & L. Van Ginderen, 10-82

D: 2,380 tons (2,890 fl) S: 28 kts Dim: 111.5 × 12.8 × 4.1

A: 4/76.2-mm DP (II × 2 - see remarks) - 2/Mk 10 Limbo mortars (III × 2) -6/324-mm ASW TT Mk 32 (III × 2)

Electron Equipt: Radar: 1/SPS-12, 1/SPS-10, 1/Sperry Mk 2, 1/SPG-48, 1/SPG-34

Sonar: 1/SQS-503, 1/SQS-501 - EW: WLR-1

M: 2 sets English-Electric GT; 2 props; 30,000 hp

Boilers: 2 Babcock & Wilcox; 43 kg/cm², 454°C Range: 4,750/14

Man: 11 officers, 199 men

Remarks: All employed in the Pacific. U.S. Mk 69 gunfire control forward, Mk 63 aft. DDE 264 has had British Mk 6, 76.2-mm/70-cal. gun mount forward replaced by U.S. Mk 34, 76.2-mm/50-cal. mount, which is mounted aft on all. Under DELEX are receiving SQS-505 in place of SQS-503, a new navigational radar in place of Mk 2, and the SLQ-25 Nixie torpedo decoy. Will remain in service until 1990-93. Refit of DDE 264 completed 1-84; DDE 263 scheduled to complete 1-85, DDE 262 in 1-86 and DDE 261 in 1987, all by Burrard Yarrows, Victoria.

FRIGATES (continued)

• 4 modified Restigouche-class ASW frigates

| | Bldr | Laid down | L | In serv. |
|---------------------|--------------------|-----------|----------|----------|
| DDE 236 GATINEAU | Davie SB, Lauzon | 30-4-53 | 3-6-57 | 17-2-59 |
| DDE 257 RESTIGOUCHE | Canadian-Vickers | 15-7-53 | 22-11-54 | 7-6-58 |
| DDE 258 KOOTENAY | Burrard, Vancouver | 21-8-52 | 15-6-54 | 7-3-59 |
| DDE 259 TERRA NOVA | Victoria Machinery | 14-11-52 | 21-6-55 | 6-6-59 |



Terra Nova (DDE 259) - pre-modernization

G. Arra, 1983



Kootenay (DDE 258) - post-DELEX modernization

G. Arra, 1983

D: 2,390 tons (2,900 fl) S: 28 kts Dim: 113.1 × 12.8 × 4.3

A: 2/76.2-mm DP Mk 6 (II × 1) fwd — 1/ASROC syst. (VIII × 1, 8 reloads) — 1/ Mk 10 Limbo mortar (III × 1) (DDE 258, 259: 6/324-mm ASW TT (III × 2)

Electron Equipt: Radar: 1/nav., 1/SPS-503, 1/SPS-10, 1/fire control Sonar: 1/SQS-501, 1/SQS-503, 1/SQS-505(VDS) EW: CANEWS passive, ULQ-6 jammer, 4 Mk 36 SRBOC RL

(VI × 4) M: 2 sets English-Electric GT; 2 props; 30,000 hp

Boilers: 2 Babcock & Wilcox, 43.3 kg/cm², 454°C Electric: 1,800 kw Range: 4,750/14 Man: 13 officers, 201 men

Remarks: All on Pacific Coast. Reconstruction with lengthened hull for VDS and ASROC in place of aft 76.2-mm mount and one Limbo completed 1968-73. U.S. Mk 69 fire-control system. Unmodified sisters Chaudière, Columbia, and St. Croix were reduced to disposal reserve in 1974, although Columbia remains in use as a stationary training ship at Esquimault. DDE 258 completed DELEX modernization 11-83, DDE 259 in 1984. SPS-503 radar replaced SPS-12, a new navigational radar was added, U.S. WSC-3 SATCOMM gear (two OE-82 antennas) was added, MK 32 ASW TT replaced the Knebworth/Corvus chaff RL on the upper deck aft and four Mk 137 launchers for the U.S. Mk 36 SRBOC chaff system replaced the flare rocket launcher atop the ASROC reload magazine. The GFCS was updated, data link capability improved, SLQ-25 Nixie torpedo decoys added, and a 400-kw generator was added. Data in listing are for ships post-DELEX; to be retained to 1994-96.

• 6 St. Laurent-class helicopter frigates

| | Bldr | Laid down | L | In serv. |
|---------------------|--------------------------|-----------|---------|----------|
| DDE 206 SAGUENAY | Halifax Shipyards | 4-4-51 | 30-7-53 | 15-12-56 |
| DDE 207 SKEENA | Burrard, Vancouver | 1-6-51 | 19-8-52 | 30-3-57 |
| DDE 229 OTTAWA | Canadian-Vickers | 8-6-51 | 29-4-53 | 10-11-56 |
| DDE 230 MARGAREE | Halifax Shipyards | 12-9-51 | 29-3-56 | 5-10-57 |
| DDE 233 Fraser | Burrard, Vancouver | 11-12-51 | 19-2-53 | 28-6-57 |
| DDE 234 ASSINIBOINE | Marine Industries, Sorel | 19-5-52 | 12-2-54 | 16-8-56 |



Fraser (DDE 233) - post-DELEX - TACAN on lattice

L. & L. Van Ginderen, 7-84



Ottawa (DDE 229) - post-DELEX

L. & L. Van Ginderen, 8-85

D: 2,260 tons (2,860 fl) S: 28 kts Dim: 111.5 × 12.8 × 4.2

A: 2/76.2-mm DP Mk 33 — 1/Mk 10 Limbo mortar (III \times 1) — 6/324-mm Mk 32 ASW TT (III \times 2) — 1/Sea King helicopter

Electron Equipt: Radar: 1/SPS-12, 1/SPS-10, 1 navigational, 1/SPG-48 f.c. Sonar: 1/SQS-503, 1/SQS-501, 1/SQS-504 VDS

EW: WLR-1—TACAN: URN-20 M: 2 sets English-Electric GT; 2 props; 30,000 hp

Boilers: 2 Babcock & Wilcox; 43.3 kg/cm², 454°C

Electric: 1,400 kw Range: 4,750/14 Man: 18 officers, 210 men

Remarks: St. Laurent (DDE 205) stricken in 1974. Fraser, which was completed by Yarrow, Ltd., has a lattice mast between her funnels to support the TACAN dome; the others carry their TACAN atop a pole mast. Nos. 207, 229, and 233 given major overhauls 1977-78. DELEX overhaul begun 1980 on 207, 229, 230, and 233; DDE 206, 230, 234 refitted 9-7-84 to 8-85: no major updates. Scheduled for retirement 1987-90.

OCEANOGRAPHIC AND HYDROGRAPHIC SHIPS

• 2 oceanographic research ships

AGOR 172 QUEST Burrard DD, Vancouver 1967 9-7-68 21-8-69



Quest (AGOR 172)

L. & L. Van Ginderen, 7-81

D: 2,130 tons (fl) S: 15 kts Dim: 77.2 (71.62 pp) × 12.8 × 4.6 Electron Equipt: Radar: 1/Decca 838, 1/Decca 929 Fuel: 256 tons Range: 10,000/12 Man: 37 tot.

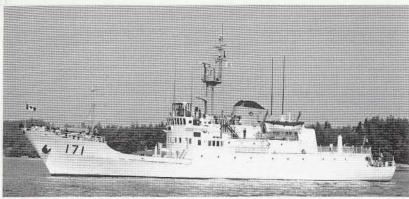
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Remarks: A modification of the *Endeavour* (AGOR 171) with the same machinery. Can carry a small helicopter. See remarks on the *Endeavour*.

| AGOR 171 ENDEAVOUR | 5 | Yarrov | w, Ltd., | Victoria | 17-8-61 | 9-3-65 |
|--------------------|----|--------|----------|--------------|-------------|--------------|
| D: 1,560 tons (fl) | S: | 16 kts | Dim: | 71.85 (65.53 | wl) × 11.73 | $\times 4.0$ |

M: 2 Fairbanks-Morse 38D8¼, 9-cylinder diesels, G.E. electric drive; 2 props; 2,960 hp

OCEANOGRAPHIC AND HYDROGRAPHIC SHIPS (continued)



Endeavour (AGOR 171)

1985

Electron Equipt: Radar: 1/Decca 838, 1/Decca 929 Fuel: 256 tons Range: 10,000/12 Man: 37 crew plus 14 scientists

REMARKS: (for both ships): Reinforced hulls for navigation in icefields. Two electro-hydraulic 5- and 9-ton cranes. Bulbous bows. Anti-rolling and anti-pitching devices. Civilian crews.

1 former minelayer

Bldr Laid down In serv. AGOR 114 BLUETHROAT Geo. T. Davie, Lauzon 31-10-52 15-9-55 28-11-55



Bluethroat (AGOR 114)

L. & L. Van Ginderen, 1985

D: 785 tons (870 fl) S: 13 kts Dim: 47.0 × 9.9 × 3.0 M: 2 diesels; 2 props; 1,200 hp Man: 27 tot.

Remarks: Completed as a mine and magnetic loop layer; redesignated a cable layer in 1959 and as a research ship in 1964.

♦ 1 ex-Royal Canadian Mounted Police patrol boat Bldr: Canadian SB & Eng. Co.

AGOR 140 FORT STEELE (L: 18-7-59, in serv. 11-59)



Fort Steele (AGOR 140)

L. & L. Van Ginderen, 10-82

D: 85 tons (110 fl) **S:** 18 kts **Dim:** $35.97 \times 6.4 \times 2.1$ M: Paxman Ventura 12 YJCM diesels; 2 CP props; 2,800 hp Range: 1,200/16 Man: 16 tot.

Remarks: Taken over 1973. Although designated a research ship, primarily acts as training ship for Reserves at Halifax. Originally had Napier Deltic diesels.

DEEP SUBMERGENCE EXPERIMENTAL SHIP

 1 former Italian stern-haul trawler Bldr: Marelli, Italy (L:. . .) ASXL 20 CORMORANT (ex-Aspa Quarto) (In serv. 10-11-78)



Cormorant (ASXL 20)

1978

D: 2,350 tons (fl) **S:** 15 kts **Dim:** 74.6 (72.0 pp) \times 11.9 \times 5.3 Electron Equipt: Radar: 1/Decca TM 1229, 1/RM 1229

M: 3 Marelli-Deutz ACR 12456 CV, 950 hp diesels, electric drive; 1 CP prop; 2.100 hp

Electric: 730 kVA + 250 kw Range: 11,800/15; 13,000/12

Remarks: Ex-Italian stern haul trawler bought in 1975 and adapted to handle and service the SDL-1 submersible, which can dive to 600 m. A large hangar for SDL-2 and a gallows crane have been built on the stern. The ship can also support conventional and saturation divers and has extensive compressor facilities, decompression chambers, etc. Numerous specialized echo-sounders fitted.

REPLENISHMENT OILERS

2 Protecteur-class multi-purpose underway replenishment ships

Laid down Bldr In serv. AOR 509 PROTECTEUR St. John SB & DD (NB) 17-10-67 18-7-68 30-8-69 St. John SB & DD (NB) 17-10-67 AOR 510 Preserver 29-5-69 30-7-70



Preserver (AOR 510)

L. & L. Van Ginderen, 3-84

D: 8,380 tons light (24,700 fl) S: 21 kts **Dim:** 172.0 (166.42 pp) \times 23.16 \times 9.15

A: guns: see remarks - 3/Sea King helicopters

Electron Equipt: Radar: 1/Decca . . . , 1/Decca TM 969—TACAN: URN-20 Sonar: 1/SQS-505

M: 1 set Canadian G.E. GT; 1 prop; 21,000 hp Boilers: 2 Electric: 3,500 kw Cargo capacity: 13,250 tons, with 12,000 tons of distillate fuel, 600 tons of

diesel oil, 400 tons of jet fuel, frozen and dry foods, spare parts, munitions, etc.

Range: 4,100/20; 7,500/11.5 Man: 15 officers, 212 men, 57 passengers

REMARKS: Four replenishment-at-sea stations, one elevator abaft the navigation bridge, two 15-ton cranes on the afterdeck. One bow-thruster. Daily fresh-water distillation capacity is 80 tons. Twin 76.2-mm gunmount, formerly carried at the extreme bow, was removed in both in 1983; locally controlled, it was of little use and had several times been washed overboard. Can be used to carry military vehicles and troops for commando purposes. Carry four LCVPs. Both operate in the Atlantic.

♦ 1 Provider-class multi-purpose underway replenishment ship

Bldr Laid down In serv. 1-5-61 28-9-63 AOR 508 PROVIDER Davie SB, Lauzon 5-7-62

D: 7,300 tons (22,000 fl) S: 20 kts

Dim: 168.0 (159.4 pp) × 23.17 × 9.15 M: GT; 1 prop; 21,000 hp Boilers: 2 Fuel: 1,200 tons Range: 5,000/20

Electric: 2,140 kw Man: 15 officers, 151 men

Remarks: 14,054 grt. Platform and hangar for two Sea King helicopters. Can carry 12,000 tons of distillate fuel, 1,200 tons of diesel, 1,000 tons of aviation gas, 250 tons of provisions, munitions, and various spare parts. Operates in the Pacific. Refitted 1982.

REPLENISHMENT OILERS (continued)



Provider (AOR 508)

G. Arra, 1982

SMALL OILERS

♦ 1 "Dun" class Bldr: Canadian Bridge Co., Walkerville, Ont.

Laid down L In serv.

27-1-43 18-9-43 25-11-43

D: 950 tons (1,500 fl) S: 10 kts Dim: 54.5 × 9.8 × 3.9 M: 1 Fairbanks-Morse diesel; 1 prop; 700 hp Man: 24 tot.

Remarks: Sister Dundalk (AOTL 501) stricken 17-2-82. Cargo: 792 tons liquid, 25 tons dry.

REPAIR SHIP

♦ 1 "Park"-class dépôt repair ship Bldr: Burrard DD, Vancouver

Laid down L In serv.

ARE 100 Cape Breton 5-7-44 7-10-44 25-4-45 (ex-Flamborough Head)

D: 8,450 tons (11,270 fl) S: 11 kts Dim: 134.6 (129.4) × 17.4 × 6.96

M: 1 set triple-expansion, reciprocating; 2,500 hp

Boilers: 2 Foster-Wheeler 17.6 kg/cm², 316°C Fuel: 709 tons

Range: 5,000/9

Remarks: Purchased from the Royal Navy in 1951. Used as training ship 1953-58. Refitted 1958-59. Equipped for pierside service at Esquimault and not expected ever to steam again. Sister Cape Scott (ARE 101) discarded in 1977.

RESERVE TRAINING SHIPS AND CRAFT

Note: In addition to the ships and craft listed below, the four *Mackenzie*-class frigates are used primarily for training, and the research ship *Fort Steele* is used to train Reserves. The units below retain hull numbers associated with their former functions. The *Bay* and *Porte* classes are planned to be replaced by a new class of 46-m, 484-ton "coastal class" units that can be converted to mine countermeasures vessels through the addition of portable modules. The smaller training craft are to be replaced by

30-m, 244-ton "harbor class" craft with a diving tender capability. The first 10 of these ships were to be requested in 1985-86.

♦ 6 Bay-class former minesweepers

| | Bldr | Laid down | L | In serv. |
|-------------------|--------------------------|-----------|----------|----------|
| PFL 159 FUNDY | Davie S.B., Lauzon | 3-55 | 14-6-56 | 27-11-56 |
| PFL 160 CHIGNECTO | Davie S.B., Lauzon | 10-55 | 26-2-57 | 1-8-57 |
| PFL 161 THUNDER | Port Arthur S.B., Ont. | 9-55 | 27-10-56 | 3-10-57 |
| PFL 162 COWICHAN | Yarrows Ltd., Victoria | 7-56 | 26-2-57 | 19-12-57 |
| PFL 163 MIRAMICHI | Victoria Machinery | 2-56 | 22-2-57 | 28-10-57 |
| PFL 164 CHALEUR | Marine Industries, Sorel | 2-56 | 17-11-56 | 12-9-57 |



Thunder (PFL 161)

1985

D: 370 tons (415 fl) S: 15 kts Dim: 50.0 (46.05 pp) × 9.21 × 2.8 Electron Equipt: Radar: 1/Sperry Mk 2 Electric: 690 kw M: 2 12-278A G.M. diesels; 2 props; 2,500 hp

Fuel: 53 tons Range: 4,500/11 Man: 3 officers, 35 men

Remarks: Reclassified as patrol escorts in 1972 and used for training reserve personnel. They took the names of minesweepers transferred to France in 1954. The *Gaspé* (143), *Comox* (146), *Ungava* (148), and *Trinity* (157) were transferred to Turkey in 1958. Hull of composite construction. One 40-mm AA removed.

♦ 5 Porte class

Bldrs: 180, 183: Davie, Lauzon; 184: Victoria Mach. & DD; 185:
Burrard DD; 186: Pictou Foundry

| | In serv. |
|---------------------------|----------|
| YMG 180 PORTE ST. JEAN | 4-6-52 |
| YMG 183 PORTE ST. LOUIS | 28-8-52 |
| YMG 184 PORTE DE LA REINE | 19-9-52 |
| YMG 185 PORTE QUEBEC | 28-8-52 |
| YMG 186 PORTE DAUPHINE | 10-12-52 |



Porte St. Louis (YMG 183)

L. & L. Van Ginderen, 10-84

D: 300 tons (429 fl) S: 12 kts Dim: $38.0 \times 8.5 \times 3.9$ M: 1 Fairbanks-Morse 6-cyl. diesel, electric drive; 1 prop; 600 hp Fuel: 47 tons Range: 4,100/10 Min: 3 officers, 20 men

Remarks: Launched 1950-52. Built as auxiliary minesweepers and net tenders.

♦ 5 former Mounted Police patrol craft (In serv. 1957-59)

PB 191 Adversus PB 193 Captor PB 195 Sidney

PB 192 DETECTOR PB 194 ACADIAN



Captor (PB 193)

L. & L. Van Ginderen, 9-81

D: 48 tons S: 12 kts Dim: 19.8 × 4.6 × 1.2 M: 1 Cummins diesel; 410 hp Range: 1,000/10.5

 1 former Mounted Police patrol craft N.S.
 Bldr: Smith & Rhulorel, Lunenburg, N.S.

PB 196 Nicholson (In serv. 1968)

D: 85 tons (fl) S: 16 kts Dim: 36.0 × 6.4 × 2.1 M: 2 Paxman YJCM diesels; 2 CP props; 2,800 hp Range: 900/13 Man: 18 tot.

♦ 5 Ville-class former tugs Bldr: Russell Bros., 1944

YTL 582 Burrard YTL 586 Queensville YTL 588 Youville (ex-Lawrenceville) YTL 587 Plainsville YTL 589 Loganville

D: 25 tons S: . . . Dim: 12.2 × 3.2 × 1.5 M: 1 diesel; 150 hp

• 3 miscellaneous reserve training craft

YAG 116 (18 tons) YFL 104 (102 tons) YDT 2 (70 tons)

• 1 sailing ketch for cadet training

YAC 3 ORIOLE — Based at Esquimault

SEAGOING TUGS

♦ 2 Saint-class oceangoing tugs Bldr: St. John DD

ATA 531 Saint Anthony (In serv. 22-2-57) ATA 532 Saint Charles (In serv. 7-6-57)



Saint Charles (ATA 532)

L. & L. Van Ginderen, 4-82

D: 840 tons (1,017 fl) S: 14 kts Dim: 46.2 (40.7 pp) × 10.0 × 5.2 M: 1 Fairbanks-Morse diesel; 1 prop; 1,920 hp Man: 21 tot.

YARD AND SERVICE CRAFT

♦ 5 Glen-class harbor tugs (In serv. 1975-77)

Bldrs: 640, 641: Yarrow, Esquimault; others: Georgetown SY, Prince Edward Isl.

YTB 644 GLENSIDE YTB 642 GLENEVIS YTB 640 GLENDYNE YTB 641 GLENDALE YTB 643 GLENBROOK

Glenbrook (YTB 643)

L. & L. Van Ginderen, 5-82

D: 255 tons (400 fl) S: 11.5 kts Dim: 28.2 × 8.5 × 3.8 M: 2 Ruston AP-3 diesels; 2 vertical cycloidal props; 1,750 hp Man: 6 tot.

Bldr: YTL 590,591: Vito Steel & Barge Co.; • 5 new Ville-class harbor tugs others: Georgetown SY, Prince Edward Isl. (In serv. 1974)

YTL 592 LISTERVILLE YTL 590 LAWRENCEVILLE YTL 594 Marysville YTL 593 MERRICKVILLE YTL 591 Parksville

D: 70 tons (fl) S: 9.8 kts Dim: 13.6 × 4.5 × 2.4 M: 1 diesel; 370 hp Man: 3 tot.

♦ 1 Wood-class harbor tug Bldr: Falconer Marine (In serv. 1944)

YTL 553 WILDWOOD

D: 65 tons (fl) S: 10 kts Dim: 18.3 × 4.9 × 1.5 M: 1 diesel; 250 hp Man: 3 tot.

DIVING TENDERS

♦ 3 steel-hulled Bldr: Ferguson, Pictou, N.S. (In serv. 1962-63)

YDT 11

D: 70 tons (132 fl) S: 11 kts Dim: 38.3 × 8.0 × . . . M: 1 G.M. 6-71 diesel; 228 hp



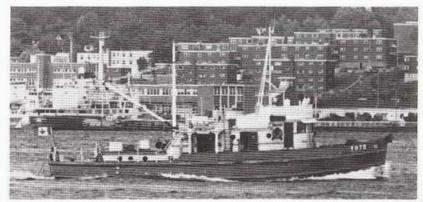
YDT 12

1980

• 3 wooden-hulled

YDT 6 YDT 8 YDT 9

D: 70 tons (fl) Dim: 22.9 × 5.6 × . . . M: 2 G.M. diesels; 2 props; 330 hp REMARKS: YDT 6 has a larger after deckhouse.



YDT 8 at Halifax

G. Gyssels, 1984

FIREBOATS

♦ 2 130-ton

YFB 561 FIREBIRD YFB 562 FIREBRAND



Firebird (YFB 561)

L. & L. Van Ginderen, 8-79

• 2 48-ton

YFB 556 FIRE TUG 1 YFB 557 FIRE TUG

TORPEDO RETRIEVERS

Note: The first of a new class of 30-m, 215-ton torpedo retriever "range vessels" was to be requested in 1985-86 to replace the craft below.

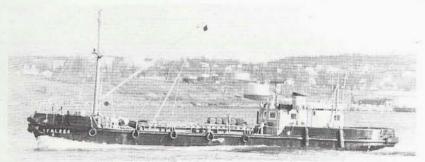
Bldr: Falconer Marine (In serv. 1944) • 2 Songhee class

YPT 120 NIMPKISH YPT 1 SONGHEE

D: 162 tons (fl) Dim: 22.8 × . . . × . . . M: 2 diesels; 2 props; 400 hp

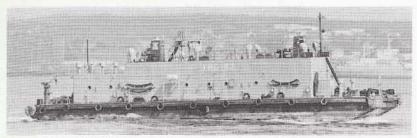
MISCELLANEOUS SERVICE CRAFT

Approximately 12 self-propelled units in the categories of fuel-oil lighter, water tanker, degaussing tender, water tender, floating crane, etc., plus a number of nonself-propelled cargo and fuel barges, power barges, sludge-removal craft, etc.



Self-propelled lighter YFNL 220

L. & L. Van Ginderen, 11-81



Support barge YRC 62

L. & L. Van Ginderen, 5-82

COAST GUARD

Created in 1972 from a number of government agencies, the Canadian Coast Guard is a civilian organization in the Federal Transportation Ministry. It mans some 150 ships, 20 icebreakers, and 34 helicopters.

Canadian icebreakers and major service ships are broken down into the following categories:

| Type | Designation | Ice-thickness | No. in service |
|------|---------------------------------------|---------------|----------------|
| 1500 | Polar Icebreaker | 3-m | 0 |
| 1400 | Sub-Polar Icebreaker | 1.6-m | 0 |
| 1300 | Heavy Gulf Icebreaker | 1.2-m | 1 |
| 1200 | River Icebreaker | 0.7-m | 7(+1) |
| 1100 | Light Icebreaker/Navaids Tender | 20-40-ton* | 11(+6) |
| 1050 | Navaids Tender | 15-ton* | 0(+2) |
| 1000 | Ice-Strengthened Navaids Tender | 10-20-ton* | 13 |
| 900 | Small Ice-Strengthened Navaids Tender | 5-10-tons* | 5 |
| 800 | Small Navaids Tender | 2-5-ton* | 7 |
| 700 | Special River Navaids Tender | 5-10-ton* | 5 |
| 600 | Large Search & Rescue Cutter | _ | 6 |
| 500 | Intermediate Search & Rescue Cutter | | 1 |
| 400 | Small Search & Rescue Cutter | 100 | 10 |
| 300 | Search & Rescue Lifeboat | | 16 |
| 200 | Small Search & Rescue Cutter | - | 0 |
| 100 | Small Search & rescue Craft | 577 | 9 |

^{*} Buoy derrick capacity

AVIATION: The Canadian Coast Guard operates one Douglas DC-3 transport and 28 helicopters: 1 Sikorsky S-61N, 3 Alouette-III, 5 Bell 212, 10 Bell 206B, 7 Bell 206L, and 2 MBB BO-105CBS.

POLAR ICEBREAKERS (Type 1500)

♦ 0 (+1) Polar 8 Project Bldr: . . .

N. . . (In serv. mid-1990s)



Polar 8 - artist's impression

Official, 1984

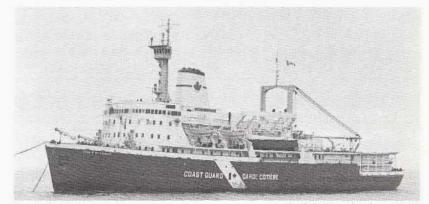
D: 37,738 tons (fl) S: 15 kts Dim: 194.0 × 32.3 × 12.2 M: CODAGE: 2 gas turbines, 4 diesel generator sets; 3 props; 100,000 hp Range: 30,000/. . . Man: 175 tot.

Remarks: Design project assigned to Burrard-Yarrows SB, but St. Johns also bidding to build. Funding still delays this oft-postponed project to build the world's most powerful icebreaker. Intended to break 2.45-in ice in continuous steaming or up to 20-in ice by ramming.

HEAVY GULF ICEBREAKERS (Type 1300)

♦ 1 turbo-electric drive

Bldr L In serv.
Louis S. St. Laurent Canadian Vickers, Montreal 3-6-66 8-69



Louis S. St. Laurent

L. & L. Van Ginderen, 3-82

D: 14,509 tons (fl) S: 17.7 kts Dim: 111.70 (101.80 pp) × 24.38 × 9.45 Electron Equipt: Radar: 2/Kelvin-Hughes 14-12, 1/Kelvin-Hughes 14-9 M: 3 sets GT, electric drive; 3 props; 24,000 hp

Electric: 4,300 kw Boilers: 4 Babcock & Wilcox; 42.2 kg/cm², 449°C Fuel: 3,632 tons Range: 16,000/13 Man: 81 tot.

Remarks: 10,907 grt. Accommodations for 216 total. Two helicopters with hangar below flight deck served by an elevator. Flume passive stabilization tanks. Carries two 15.2-m stores landing craft. Operates off Maritime Provinces. Serious fire 3-82.

RIVER ICEBREAKERS (Type 1200)

♦ 0 (+ 1) new construction Bldr: Burrard Yarrows, . . .

Region L In serv. N. 7-87



New Type 1200 icebreaker

Burrard Yarrows Corp.

D: 8,290 tons (fl) **S**: 16.5 **Dim**: $99.80 \times 19.70 \times 7.24$

Electron Equipt: Radar: 2/nav. M: Diesel-electric, 2 props; 16,000 hp

Fuel: . . . Range: 15,000/13.5 Man: 72 tot. accommodations

Remarks: Ordered 25-5-84. Design based on Pierre Radisson class. 5,910 grt. Will be based on Atlantic Coast.

• 3 Pierre Radisson river icebreakers

Bldr Region In serv. PIERRE RADISSON Burrard DD, Vancouver Laurentian 3-6-77 1978 SIR JOHN FRANKLIN Burrard DD, Vancouver Newfoundland 1980 10-3-78 Port Weller DD, Ont. DES GROSEILLIERS 7-8-82 Laurentian

D: 6,400 tons (7,721 fl)
 S: 16.2 kts
 Dim: 98.15 (87.90 pp) × 19.50 × 7.16
 Electron Equipt: Radar: 1/TR-611-1, 1/TR-311-S1
 Electric: 2,250 kw
 M: Diesel-electric: 6 Montreal Loco MLW 251V-16F diesels (17,580 hp total); 6
 G.E.C. alternators (11,100 kw); 2 G.E.C. motors; 2 props; 13,600 hp

Remarks: 5,910 grt/2,820 dwt; 440 m³ cargo capacity. Franklin: 6,100 grt, range: 16,500/135. Bow-thruster-equipped. Telescopic hangar and flight deck for one Bell-212 helicopter. Passive-tank stabilization. Used on St. Lawrence River and

Fuel: 2,215 tons Range: 15,000/13.5 Man: 55 tot. (76 accomm.)

Great Lakes in winter, in Arctic in summer. Third unit ordered 1981.

RIVER ICEBREAKERS (continued)



Des Groseilliers

L. & L. Van Ginderen, 6-84

1 river icebreaker

NORMAN McLeod Rogers Bldr: Vickers, Montreal (In serv. 6-69)



Norman McLeod Rogers

L. & L. Van Ginderen, 4-82

D: 6,506 tons (fl) S: 16.5 kts Dim: 89.92 (81.10 pp) × 19.05 × 6.10

Electron Equipt: Radar: 2/Kelvin-Hughes 14/12 M: CODAG: 4 Fairbanks-Morse 12-cyl., 2,000-hp diesels; 2 G.E. W-41G,

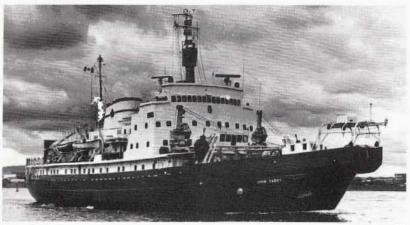
4,400-hp gas turbines; electric drive; 2 props; 13,200 hp Electric: 1,615 kw Fuel: 1,095 tons Range: 12,000/12 Cargo: 900 tons Man: 55 tot.

Remarks: 4,179 grt/2,320 dwt. Also navigation tender. One helicopter, telescoping hangar. Operates in Laurentian Region.

1 cable-laying river icebreaker

Bldr: Vickers, Montreal

JOHN CABOT (In serv. 31-5-65)



John Cabot

1969

D: 4,180 tons light (6,502 fl) **S:** 15 kts **Dim:** 95.50 (84.13 pp) \times 18.29 \times 6.73 Electron Equipt: Radar: 1/Decca 969, 1/Decca 2400

M: 4 Fairbanks-Morse 38D8-12 diesels, electric drive; 2 props; 9,000 hp

Electric: 1,060 kw Fuel: 719 tons Range: 10,000/12 Man: 79 tot.

Remarks: 5,097 grt/2,220 dwt. Carries 400 miles of cable in 3 tanks. Flume passive stabilization and heeling tanks, telescoping helo hangar, 1,000 hp bow-thruster, 70ton towing winch (50-ton bollard pull). Operates in Newfoundland Region.

1 river icebreaker Bldr: Davie SB, Lauzon, Que.

JOHN A. MACDONALD (In serv. 9-60)

D: 9,307 tons (fl) S: 15.5 kts Dim: 96.01 (88.40 pp) × 21.30 × 8.58 M: 9 Fairbanks-Morse 38D8% diesels, electric drive; 3 props; 15,000 hp Fuel: 2,245 tons Range: 20,000/10 Man: 80 tot.

Remarks: 6,186 grt/3,380 dwt. Three helicopters, fixed hangar. 221-m3 cargo space. Four stores landing craft. Operates in Maritime Provinces Region.



John A. MacDonald

L. & L. Van Ginderen, 10-82

Bldr: Marine Ind., Sorel, Que. 1 river icebreaker

Laid down In serv. 14-12-51 18-11-49 LABRADOR

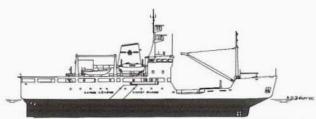
D: 3,500 tons (7,051 fl) S: 16 kts Dim: 81.99 (76.2 pp) × 19.44 × 9.30 M: 6 Fairbanks-Morse 38D8½ diesels, electric drive; 2 props; 10,000 hp Fuel: 2,641 tons Range: 23,000/12 Man: 85 tot.

Remarks: 3,823 grt. Patterned on U.S. Coast Guard "Wind" class. Transferred from Canadian Navy 2-58. Heeling tanks, telescoping helicopter hangar. Operates in Maritime Region.

LIGHT ICEBREAKER/NAVIGATIONAL AIDS TENDERS (Type 1100)

• 0 (+6) new construction

| | Bldr | Laid down | L | In serv. |
|-----------------------|-------------------------------------|-----------|---|----------|
| Martha L. Black | Burrard Yarrows, Vancouver, B.C. | 3-84 | | 2-86 |
| George R. Pearkes | Burrard Yarrows, Victoria, B.C. | 3-84 | | 5-86 |
| Ann Harvey | Halifax SY | 1984 | | 10-86 |
| SIR WILLIAM ALEXANDER | Marine Industries, Sorel, Que. | | | 9-86 |
| EDWARD CORNWALLIS | Marine Industries, Sorel, Que. | * * * | | 12-86 |
| SIR WILFRID LAURIER | Collingwood SY, | | | 7-86 |



Type 1100 icebreaker

A.D. Baker III

D: 3,140 tons light (4,662 fl) S: 15.3 kts Dim: 83.00 (75.00 pp) × 16.20 × 5.75 Electron Equipt: Radars: 2/nav.

M: Diesel-electric: 3 Bombardier/Alco 12V-251 diesels (2,950-hp each) 3 Can. G.E. generators, 2,000 kw each, 2 Can. G.E. motors; 2 props; 8,000 hp-bowthruster

Fuel: 693 tons Range: 6,500 +/15 Man: 44 (+ 6 spare accom.)

Remarks: 1,950 grt/1,522 dwt. Will carry one Bell 212 helicopter. Cargo capacity is 400 tons in forward hold, 50 tons aft. Carry 670 tons water ballast. Construction of pair assigned to Marine Industries delayed by strike.

 GRIFFON Bldr: Davie SB, Lauzon, Que (In serv. 12-70)



Griffon

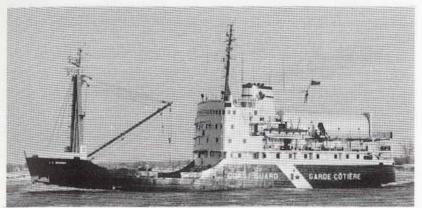
L. & L. Van Ginderen, 8-78

LIGHT ICEBREAKERS/NAVIGATIONAL AIDS TENDERS (continued)

D: 2,959 tons (fl) S: 14.0 kts Dim: 71.32 × 14.94 × 4.73 Electron Equipt: Radar: 2/Kelvin-Hughes 14-12 Electric: 422 kw M: 4 Fairbanks-Morse 38D8\%-8 diesels, electric drive; 2 props; 4,000 hp Fuel: 345 tons Range: 5,500/11 Man: 38 tot.

Remarks: 160-ton cargo capacity. Flume passive tank stabilization. Helicopter landing platform, no hangar; 10- and 20-ton buoy derricks. Plans were announced during 1982 to order two similar ships. Operates in Central Region (Great Lakes).

♦ J.E. BERNIER Bldr: Davie SB, Lauzon, Que (In serv. 8-67)



J. E. Bernier - with hangar extended

L. & L. Van Ginderen, 12-84

D: 3,150 tons (fl) S: 13.5 kts Dim: 70.48 (64.62 pp) × 14.94 × 4.91 Electron Equipt: Radar: Kelvin-Hughes; 1/14-12, 1/14-9 M: 2 diesels, electric drive; 2 props; 4,250 hp Fuel: 450 tons Range: 8,000/11 Man: 37 tot.

Remarks: Similar to Griffon and Montcalm class, but thinner plating. Has telescoping helo hangar. Flume passive stabilization tanks. Operates in Laurentian Region.

♦ Narwhal Bldr: Canadian Vickers, Montreal (In serv. 7-63)

D: 2,222 tons (fl) S: 12 kts Dim: 76.66 (69.80 pp) \times 12.80 \times 3.75 M: 2 Cooper-Bessemer direct-drive diesels, fluid couplings; 2 props; 2,000 hp Electric: 796 kw Fuel: 399 tons Range: 9,200/11 Man: 35 tot.

Remarks: 2,064 grt/697 dwt. Originally typed "Depot Ship/Lighthouse and Buoy Tender; and intended for summer use as an Arctic supply ship carrying 60 stevedores, 20 stores landing craft crew, and 20 administrators. During rest of year, based at Dartmouth, N.S. Has 40-ton buoy derrick. Mid-life refit at Halifax Shipyard, 1984-85: helicopter deck and telescoping hangar added, new engines.

♦ Wolfe Bldr: Canadian Vickers, Montreal (In serv. 11-59)



Wolfe - note telescoping hangar and stores landing craft

1969

D: 2,207 tons (fl) S: 13 kts Dim: 76.94 (67.16 pp) × 14.71 × 4.98 M: 2 sets 4-cylinder, triple-expansion reciprocating steam; 2 props; 4,000 hp Boilers: 2 Babcock & Wilcox; 16.5 kg/cm², 288°C Fuel: 997 tons Range: 6,000/10 Man: 43 tot.

Remarks: Longer version of *Montcalm*: 2,022 grt. Operates in Western Region. Two 9.1-m landing craft, telescoping helo hangar, 25-ton buoy boom.

◆ Camsell Bldr: Burrard DD, Vancouver (In serv. 10-59)

D: 3,150 tons (fl) S: 13.5 kts Dim: 68.15 (61.53 pp) × 14.63 × 4.88 M: 2 diesels, electric drive; 2 props; 4,250 hp Fuel: 536 tons Range: 12,000/11 Man: 42 tot.

Remarks: 2,022 grt. Based at Vancouver, B.C. Used in lighthouse supply work. Telescoping helicopter hangar.

ALEXANDER HENRY Bldr: Port Arthur SB, Port Arthur, Ont. (In serv. 7-59)



Alexander Henry

L. & L. Van Ginderen, 7-84

D: 3,195 tons (fl)
 S: 13 kts
 Dim: 64.01 × 13.26 × 5.86
 M: Diesels, electric drive; 2 props; 3,550 hp
 Fuel: 387 tons
 Range: 6,000/12
 Man: 34 tot.

Remarks: 1,674 grt. Based on Lake Ontario at Parry Sound. Has two 9.1-m stores landing craft, helicopter deck but no hangar; 20-ton derrick.

♦ SIR HUMPHREY GILBERT Bldr: Davie SB, Lauzon, Que (In serv. 6-59)

D: 3,053 tons (fl) S: 13 kts Dim: 67.06 (61.53 pp) × 14.63 × 4.98 M: 2 diesels, electric drive; 4,250 hp Fuel: 552 tons Range: 10,000/11 Man: 40 tot.

Remarks: 1,931 grt. Home-ported at Quebec City. 25-ton buoy derrick. Telescoping helicopter hangar. No landing craft. Refitted 1984 at Halifax SY, with new bow, Wärtsilä bubbler system.

◆ SIR WILLIAM ALEXANDER Bldr: Halifax SY (In serv. 6-59)



Sir William Alexander — hangar extended

L. & L. Van Ginderen, 12-82

D: 3,607 tons S: 13.5 kts Dim: 83.06 × 13.72 × 5.33 M: 2 diesels, electric drive; 2 props; 4,250 hp Fuel: 563 tons Range: 12,000/12.5 Man: 41 tot.

Remarks: 2,154 grt/1,610 dwt. Based at Dartmouth, Nova Scotia. Carries two 9.1-m stores landing craft. Helo deck, no hangar. 20-ton buoy boom.

♦ Montcalm Bldr: Davie SB, Lauzon, Que. (In serv. 7-3-57)

D: 2,094 tons S: 13 kts Dim: 67.16 × 14.71 × 4.98

M: 2 sets Vickers-Skinner Uniflow 4-cyl., triple-expansion reciprocating steam; 2 props; 4,000 hp

Boilers: 2 Babcock & Wilcox; 16.5 kg/cm², 288°C Fuel: 571 tons Range: 4,000/10 Man: 45 tot.

Remarks: 2,017 grt. Based at Quebec City. Telescoping helicopter hangar, two 9.1-m stores landing craft, 25-ton buoy derrick.

Walter E. Foster Bldr: Canadian Vickers, Montreal (In serv. 12-54)

D: 2,907 tons (fl) S: 12.5 kts Dim: 69.85 × 12.95 × 5.03

M: 2 sets Vickers-Skinner Uniflow 4-cyl., triple-expansion reciprocating steam; 2 props; 2,000 hp
Boilers: 2 Fuel: 482 tons Range: 3,000/11 Man: 43 tot.

Remarks: 1,672 grt. Based at St. John, Newfoundland. No helo facilities.

Edward Cornwallis

Bldr: Canadian Vickers, Montreal (In serv. 12-49)

LIGHT ICEBREAKERS/NAVIGATIONAL AIDS TENDERS (continued)



Walter E. Foster

1969



Edward Cornwallis

L. & L. Van Ginderen, 3-80

D: 3,996 tons (fl) **S:** 13.5 kts **Dim:** 78.94 $(73.15 \text{ pp}) \times 13.26 \times 5.51$

M: 2 sets Vickers-Skinner Uniflow 4-cyl., triple-expansion reciprocating; 2 props; 2,800 hp

Boilers: 2, Scotch Fuel: 589 tons Range: 7,500/12.5 Man: 43 tot.

Remarks: 1,965 grt/1,800 dwt. In reserve at Dartmouth, N.S. since 1969, but was reactivated 1980 with helicopter deck replacing cargo facilities aft. To scrap 1986.

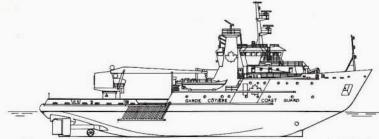
NAVIGATIONAL AIDS TENDERS (Type 1050)

• 2 Samuel Risley class

Bldr L In serv.

SAMUEL RISLEY VITO Corp., Vancouver . . . 4-85

EARL GREY Ferguson Ind., Pictou, N.S. . . . 12-85



Coast Guard Type 1050 icebreaker

A. D. Baker III

D: 2,935 tons (fl) **S:** 12 kts **Dim:** $69.73 \times 13.70 \times 5.20$

Electron Equipt: Radar

M: 4 Bombardier/Wärtsilä diesels; 2 Kort nozzle CP props; 8,800 hp — 750-hp bow-thruster — 400-hp stern-thruster

Fuel: . . . tons Range: . . . Man: 31

Remarks: Design based on offshore supply vessel technology. Able to break 0.6 m ice. Computerized directional control. Buoy crane capacity 15 ton at 8.0 m radius/8.5 tons at 20 m. Two fire monitors produce $600~\rm m^3/hr$ to 75 m range

ICE-STRENGTHENED NAVIGATIONAL AIDS TENDERS (Type 1000)

♦ 2 Provo Wallis class

Bldr: Marine Industries, Sorel, Que.

Provo Wallis (In serv. 10-69) Bartlett (In serv. 12-69)

D: 1,722 tons (fl) S: 12.5 kts Dim: 57.68 × 12.95 × 3.66

Electron Equipt: Radar: 2/Kelvin-Hughes 14-12

M: 2 direct-drive diesels; 2 CP props; 1,760 hp Fuel: 102 tons

Range: 3,300/11 Man: 29 tot.

Remarks: 1,313 grt. Carry one 9.1-m landing craft. Have 15-ton derrick. P. Wallis based at St. John's, Bartlett at Dartmouth, N.S. P. Wallis crew: 30 tot.



Provo Wallis

L. & L. Van Ginderen, 7-77

♦ Tracy Bldr: Port Weller DD, Ltd. (In serv. 17-4-68)



Tracy

L. & L. Van Ginderen, 1-84

D: 1,320 tons (fl) S: 13 kts Dim: 55.17 (50.29 pp) × 11.58 × 3.66 Electron Equipt: Radar: 1/Kelvin-Hughes 14-12 Electric: 402 kw M: 2 Fairbanks-Morse 38D8%-8 diesels, electric drive; 2 props; 2,000 hp Fuel: 131 tons Range: 5,000/11.5 Man: 30 tot.

REMARKS: 960 grt. Based at Sorel, Quebec.

♦ MONTMAGNY

Bldr: Russell Bros., Owen Sound, Ont. (In serv. 5-63)



Montmagny

L. & L. Van Ginderen, 12-81

D: 625 tons (fl) S: 12 kts Dim: 45.11 × 8.84 × 2.59 M: 2 Werkspoor diesels; 2 props; 1,048 hp Fuel: 48 tons Range: 4,000/10 Man: 22 tot.

REMARKS: 497 grt. Based at Sorel, Quebec. One 7-ton derrick.

◆ NICOLET Bldr: Collingwood SY, Collingwood, Ont. (In serv. 12-66)

D: 901 tons (fl) S: 13 kts Dim: 51.74 × 11.10 × 3.05 Electron Equipt: Radar: 1/Kelvin-Hughes 14-9 M: 2 diesels; 2 props; 1,350 hp Fuel: 76 tons Range: 3,000/10 Man: 26 tot.

Remarks: 887 grt. Based at Sorel, Que., for use as a hydraulic survey and soundings ship on the St. Lawrence Ship Channel. An updated *Beauport*.

ICE-STRENGTHENED NAVIGATIONAL AIDS TENDERS (continued)



Nicolet

L. & L. Van Ginderen, 6-84

♦ Simcoe Bldr: Canadian Vickers, Montreal (In serv. 1962)

D: 1,392 tons (fl) S: 13 kts Dim: 54.62 × 11.58 × 3.83 M: 2 diesels, electric drive; 2 props; 2,000 hp Fuel: 156 tons Range: 5,000/10 Man: 34 tot.

Remarks: 961 grt. Based on Lake Ontario at Prescott.

♦ Thomas Carlton Bldr: St. John's DD (In serv. 1960)

D: 1,636 tons (fl) S: 12 kts Dim: 50.84 × 12.83 × 4.15 M: 2 diesels, electric drive; 2 props; 2,900 hp Fuel: 178 tons Range: 2,200/11 Man: 38 tot.

Remarks: 1,217-grt. Home-ported at St. John, New Brunswick. Helicopter platform, no hangar; has 20-ton buoy derrick.

♦ Beauport Bldr: Davie SB, Lauzon, Que. (In serv. 1960)



Beauport-broad bow, like Nicolet

L. & L. Van Ginderen, 7-82

D: 789 tons (fl) S: 13 kts Dim: 51.05 × 10.36 × 2.74 Electron Equipt: Radar: 1/LN-47 M: 2 diesels; 2 props; 1,280 hp Fuel: 63 tons Range: 3,000/10 Man: 26 tot.

Remarks: 813 grt. Based at Sorel, Que., as a hydraulic survey and soundings ship on the St. Lawrence Ship Channel. 8-ton electric buoy crane.

♦ Simon Fraser Bldr: Burrard DD, Vancouver (In serv. 2-60)



Simon Fraser

L. & L. Van Ginderen, 12-79

D: 1,375 tons (fl) S: 13.5 kts Dim: $62.26 \times 12.80 \times 4.27$ M: 2 diesels, electric drive; 2 props; 2,900 hp Fuel: 178 tons Range: 5,000/10 Man: 38 tot.

Remarks: 1,352 grt. Based at Quebec City. Helicopter deck and telescoping hangar. Very similar to *Tupper*. Refitted at Versatile Vickers SY, Montreal, 1985

◆ TUPPER Bldr: Marine Ind., Sorel, Que. (In serv. 12-59)

D: 1,380 tons (fl) **S:** 13.5 kts **Dim:** $62.36 \times 12.80 \times 4.23$ **M:** 2 diesels, electric drive; 2 props; 2,900 hp **Fuel:** 206 tons **Range:** 5,000/11 **Man:** 37 tot.

Remarks: 1,358 grt. Based at Charlottetown, Prince Edward Isl. Helicopter deck, no hangar. 15-ton buoy derrick.

♦ Montmorency Bldr: Davie SB, Lauzon, Que. (In serv. 8-57)

D: 980 tons (fl) S: 12 kts Dim: 50.14 × 9.75 × 3.35 M: 2 diesels; 2 props; 1,200 hp Fuel: 142 tons Range: 3,500/11 Man: 30 tot.

Remarks: 751 grt. Operates on Lake Huron, from Parry Sound. 12-ton buoy derrick.

♦ 2 Alexander McKenzie class Bldr: Burrard DD, Vancouver, B.C.

ALEXANDER McKenzie (In serv. 1950) Sir James Douglas (In serv. 11-56)

D: 768 tons (fl) S: 11.5 kts Dim: 46.00 × 9.22 × 3.17 M: 2 diesels; 2 props; 1,000 hp Fuel: 86 tons

Range: 6,000/10.5 Man: 29 tot.

REMARKS: McKenzie: 560 grt; based at Dartmouth, N.S., since 1982. Douglas: 564 grt; based at Prince Rupert, British Columbia. 10-ton buoy boom. Douglas is 45.87 o.a. by 9.45 beam; range: 5,500/10.5 on 89 tons fuel. Both soon to be stricken.

SMALL ICE-STRENGTHENED NAVIGATIONAL AIDS TENDERS (Type 900)

♦ Namao Bldr: Riverton Boatwks, Manitoba (In serv. 1975)

D: 386 tons (fl) S: 12 kts Dim: 33.53 × 8.53 × 2.13 M: 2 diesels; 2 props; 1,350 hp Fuel: 34.5 tons Range: 2,000/11 Man: 10 tot.

Remarks: Employed as buoy tender on Lake Winnepeg.

ROBERT FOULIS Bldr: St. John DD, N.B. (In serv. 24-11-69)

D: 332 tons (fl) S: 11 kts Dim: 31.70 × 7.62 × 2.44 M: 2 diesels; 2 props; 960 hp Fuel: 21 tons Range: 1,500/10 Man: 12 tot.

REMARKS: 258 grt. Employed on St. John River, New Brunswick.

♦ Kenoki Bldr: Erieu Dry Dock, Frien, Ont. (In serv. 5-64)



Kenoki—with pilings retracted

1969

D: 274 tons (438 fl) S: 10.5 kts Dim: 33.22 × 9.75 × 1.85 Electron Equipt: Radar: 1/Kelvin-Hughes 14-9 M: 2 diesels; 2 props; 800 hp Fuel: 40 tons Range: 1,000/10 Man: 12 tot.

Remarks: 310 grt. Barge-like hull with four hydraulic pilings for precise positioning while working as a shallow-water buoy tender. Two 5-ton cranes. Based at Prescott, Ont.

◆ Skidegate Bldr: Burrard Dry Dock, Vancouver, B.C. (In serv. 4-64)



Skidegate

1969

SMALL ICE-STRENGTHENED NAVIGATIONAL AIDS TENDERS (continued)

D: 203 tons (fl) S: 11.5 kts Dim: 26.59 × 6.73 × 2.44 M: 2 Cummins V-12 diesels; 2 props; 680 hp Fuel: 22 tons Range: 2,350/10 Man: 11 tot.

Remarks: 136 grt. Based at Prince Rupert, B.C.

♦ VERENDRYE Bldr: Davie SB, Lauzon, Que. (In serv. 10-59)

D: 406 tons (fl) S: 10 kts Dim: 36.40 × 7.95 × 3.05

M: 2 diesels; 2 props; 760 hp Fuel: 28 tons Range: 2,000/9.5 Man: 20 tot.

Remarks: 297 grt. Based at Sorel, Que., for use on St. Lawrence Ship Channel. 6-ton electrohydraulic buoy crane.

SMALL NAVIGATIONAL AIDS TENDERS (type 800)

♦ 2 Partridge Island class Bldr: Breton Industrial, Hawkesbury, N.S.

Partridge Island (In serv. 6-85) Île Des Barques (In serv. 1985)

D: . . . S: . . . Dim: . . . × . . . × . . . M: Diesels; . . . props; . . . hp Man: . . . tot.

Remarks: Partridge Island based at St. John Newf.; Île des Barques operates in the Laurentian Region.

Bldr: Canadian Dredge & Dock, Kingston, Ont. 2 Cove Isle class

COVE ISLE (In serv. 1980) GULL ISLE (In serv. 1980)

D: 116 tons (fl) S: 10 kts Dim: 20.00 × 6.00 × 1.35 M: 2 diesels; 2 props; 470 hp Range: 2,500/8 Man: 5 tot.

REMARKS: Both operate on Great Lakes, in Central Region.

◆ F. G. OSBOURNE (In serv. 1974) — workboat

D: . . . tons S: 8 kts Dim: 15.85 × 5.18 × 1.22 M: Diesels; . . . hp Man: 4 tot.

Bldr: Kingston SY, Ont. (In serv. 5-68) ◆ JEAN BOURDON



Jean Bourdon

L. & L. Van Ginderen, 7-82

D: 84 tons (fl) S: 10.5 kts Dim: 20.60 × 6.10 × 1.67 Electron Equipt: Radar: 1/Raytheon 1405A

M: 2 diesels; 2 props; 340 hp Electric: 30 kw Fuel: 4.8 tons Range: 750/10 Man: 4 tot.

Remarks: 82.2 grt. For hydrographic survey work on the St. Lawrence Ship Channel; based at Sorel, Que.

♦ Nomad V (In serv. 1966)

D: . . . tons S: 7 kts Dim: 12.80 × 4.27 × 1.22 M: Diesels; . . . hp

Bldr: Lunenberg Foundry (In serv. 1957) Nokomis

D: 65 tons (fl) **S**: 9.5 kts **Dim**: $20.24 \times 5.33 \times 2.16$

M: 1 diesel; 120 hp Fuel: 4.1 tons Range: 650/9 Man: 4 tot.

REMARKS: 64 grt. Based at Parry Sound, Lake Huron.

◆ Barge 501 (In serv. . . .)

D: 56 tons (fl) **S:** 10 kts **Dim:** $17.07 \times 4.37 \times 1.17$ **M:** 2 Gray Marine 64 HN9 diesels; 2 props; 330 hp

Range: 130/10 Man: 4 tot.

REMARKS: Former U.S. Navy LCM (6) landing craft, used on Great Lakes for survey work. Was offered for sale in 1982, but was still on official list 9-84.

SPECIAL RIVER NAVIGATIONAL AIDS TENDERS (Type 700)

Note: All below serve in the Western Region, mostly on the Mackenzie River, Northwest Territories.

 Dumit Bldr: Allied SB, Vancouver, B.C. (In serv. 7-79)

D: 628 tons (fl) S: 12 kts Dim: 48.80 × 12.20 × 1.64 M: Diesel-electric; . . . props; 1,140 hp

Fuel: 175 tons Range: 9,000/10 Man: 10 tot.

 Nahidik Bldr: Allied SB, Vancouver, B.C. (In serv. 1974)

D: 1,122 tons (fl) S: 14 kts Dim: 53.35 × 15.24 × 1.98 M: Diesel electric: 2 diesels; 2 props; 4,360 hp Fuel: 331 tons Range: 1,000/11 Man: 15 tot.

Bldr: Allied SB, Vancouver (In serv. 9-63) • ТЕМВАН

D: 181 tons (fl) S: 13 kts Dim: 37.51 × 7.92 × 0.91 M: 2 diesels; 2 props; 680 hp Fuel: 21 tons Range: 1,000/11 Man: 9 tot.

♦ Eckaloo Bldr: Allied SB, Vancouver, B.C. (In serv. 1961)

D: 135 tons (fl) S: 10 kts Dim: 25.26 × 6.71 × 1.22 M: 2 diesels; 2 props; 600 hp Fuel: 17.3 tons Range: 600/9.5 Man: 9 tot.

Bldr: Allied SB, Vancouver, B.C. (In serv. 1958)

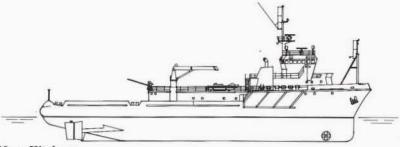
MISKANAW (operates on the Hay River)

D: 99.6 tons (fl) S: 10 kts Dim: 19.51 × 5.97 × 1.22 M: 2 diesels; 2 props; 300 hp Fuel: 9.9 tons Range: 300/9.5 Man: 9 tot.

LARGE SEARCH AND RESCUE CUTTERS (Type 600)

 1 modified offshore anchor-handling vessel Bldr: Marystown SY, Marystown, N.S.

Laid down MARY HICHENS (ex-Beau Bois) 23-5-83 5-11-83 31-3-84



Mary Hitchens

D: 3,262 tons (fl) S: 15 kts Dim: 64.40 (56.40 pp) × 13.80 × 5.91 M: 2 B & W Alpha 14-U28L-VO diesels; 2 Kort-nozzle CP props; 7,420 hp bow-thruster

Fuel: . . . tons Range: 8,000/15

Man: 7 officers, 2 cadets, 10 men, and up to 85 survivors

Remarks: Ulstein Type 704 oilfield supply-tug design purchased on completion. Based at Dartmouth, N.S. Carries 8,000 liters foam concentrate and fire monitors. Can pump 5,000 lit./min. Two 6.7-m rigid inflatable rescue boats. Tank stabilization.

Bldr: Bel-Aire SY, North Vancouver, B.C. (In 1 former oilfield supply tug serv. 1972)

GEORGES A. DARBY (ex-. . .)

D: 2,204 tons (fl) Dim: 56.08 × 13.72 × 4.72

M: 2 Ruston diesels; 2 props; 4,380 hp Range: 6,500/11.5 Man: 16 tot.

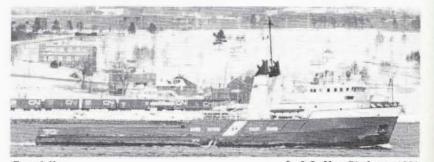
REMARKS: Purchased 1-82 and refitted for Coast Guard at Vancouver for Pacific service. 885 grt. Similar to Grenfell.

 2 former oilfield supply ships Bldr: Bel-Aire SY, North Vancouver, B.C.

Grenfell (ex-M/V Baffin Service, ex-Nordic V)

(In serv. 8-73)

Jackman (ex-M/V Hudson Service, ex-Nordic IV) (In serv. 8-73)



Grenfell

L. & L. Van Ginderen, 1981

LARGE SEARCH AND RESCUE CUTTERS (continued)

D: 2,106 tons (fl) **S:** 13 kts **Dim:** $56.10 (51.94 \text{ pp}) \times 13.70 \times 4.42$ **M:** 4 G.M. 16-565C diesels; 2 props; 6,400 hp **Electric:** 360 kw **Fuel:** 587 tons **Range:** 6,500/12 **Man:** 16 tot.

Remarks: 877 grt/452 dwt. Acquired from Nordic Offshore Services in 1979 and based at St. Johns, Newfoundland. Typical oilfield supply tugs with long, low, open cleared fantail. Main engines built 1950, rebuilt in 1972 for shipboard use. Ice-strengthened hulls. Grenfell: 2,113 tons, 457 tons fuel

♦ ALERT Bldr: Davie SB, Lauzon, Que. (In serv. 20-11-69)



Alert

L. & L. Van Ginderen, 12-82

D: 2,164 tons (fl) **S:** 18.7 kts **Dim:** $71.40 \times 12.12 \times 4.94$ **M:** 2 diesels; electric drive; 2 props; 9,716 hp **Range:** 6,000/14.5 **Fuel:** 275 tons **Man:** 38 tot.

Remarks: 1,752 grt. Was to have been a class of six. Telescoping hangar for helicopter. Operates in Atlantic.

Note: Type 600 rescue cutler *Daring* (ex-R.C.M.P. *Wood*) was stricken 1985, having been replaced by *Mary Hichens*.

INTERMEDIATE SEARCH AND RESCUE CUTTERS (Type 500)

♦ VILLE MARIE Bldr: Russell-Hipwell Eng., Owen Sound, Ont. (In serv. 1960)



Ville Marie

L. & L. Van Ginderen, 6-84

D: 518 tons (fl) S: 13.5 kts
 Dim: 40.92 × 8.71 × 2.24
 M: 2 diesels; 2 props; 1,000 hp
 Fuel: 50 tons
 Range: 1,000/13
 Man: 23 tot.
 Remarks: 390 grt. Also used as soundings boat for St. Lawrence Ship Channel, based at Sorel. Que.

SMALL SEARCH AND RESCUE CUTTERS (Type 400)

♦ 1 or more new construction

Remarks: No data available, except that they have Kevlar plastic hulls, and one will operate in the Central Region (Great Lakes).

◆ 4 Point Henry class Bldr: Breton Industry & Machinery, Point Hawkesbury, N.S.

 $\begin{array}{ccc} \text{CG 123 Point Henry} & \text{CG 125 Point Race} \\ \text{CG 124 \^{l}e Rouge} & \text{CG 126 Cape Hurd} \end{array}$

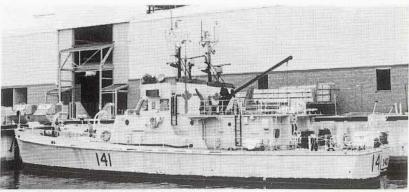
D: 77 tons (97 fl) **S:** 24 kts **Dim:** $21.30 \times 5.50 \times 1.70$ **M:** 2 MTU 8V396 TC2 diesels; 2 props; 1,300 hp

Fuel: 7 tons Range: 1,000/12 Man: 5 tot.

Remarks: CG 123, 125 proceeded from Nova Scotia to the Pacific Coast under own power. CG 126 based in Central Region, CG 124 in Laurentian Region. First two completed 1980, other pair 4-82.

• 3 R class, based on U.S. Coast Guard 95-ft. design

| | Bldr | In serv. |
|--------------|-------------------------------------|----------|
| CG 140 RACER | Yarrow, Esquimault, B.C. | 1963 |
| CG 143 READY | Burrard DD, Vancouver, B.C. | 1963 |
| CG 145 RIDER | Victoria Mach Dépôt, Victoria, B.C. | 1962 |



Rally (CG 141) outboard Rapid (CG 142)

L. & L. Van Ginderen, 10-82

D: 105 tons (fl) S: 20 kts Dim: 29.03 (27.34 pp) × 6.10 × 1.96 M: 4 Cummins VT-12-M-700 diesels; 2 props; 2,400 hp Electric: 76 kw Fuel: 12 tons Range: 1,050/16; 1,500/12.5 Man: 12 tot.

Remarks: CG 145 was taken over from the Bureau of Fisheries in 1969. CG 143 is in reserve. Sisters Rally (CG 141), Rapid (CG 142) and Relay (CG 144) stricken 1983.

♦ 3 S class—for Great Lakes service

| | Bldr | In serv. |
|-----------|------------------------------------|----------|
| SPUME | Grew Ltd., Penatanguishene, Ont. | 11-63 |
| SPRAY | J. J. Taylor & Son, Toronto, Ont. | 1964 |
| SPINDRIFT | Cliff Richardson BY, Medford, Ont. | 1964 |



Spindrift

1969

D: 57 tons (fl) S: 14 kts Dim: 21.88 × 5.11 × 1.40 M: 2 diesels; 2 props; 1,050 hp Fuel: 5.3 tons Range: 500/13.5 Man: 4 tot.

SEARCH AND RESCUE LIFEBOATS (Type 300)

♦ 16 U.S. Coast Guard 44-ft. motor lifeboat class

| | In serv. | Region | | In serv. | Region |
|---------------------|----------|---------|------------------------|----------|--------|
| CG 101 Souris | 1967 | Mar. | CG 109 THUNDER BAY | 1974 | Cent. |
| CG 102 Westport | 1969 | Mar. | CG 114 Burgeo | 1973 | Newf. |
| CG 103 BICKERTON | 1969 | West. | CG 115 SHIPPEGAN | 1975 | Mar. |
| CG 104 BAMFIELD | 1970 | West. | CG 116 CLARK'S HARBOUR | 1975 | Mar. |
| CG 105 Tofino | 1970 | West. | CG 117 Sambro | 1975 | Mar. |
| CG 106 BULL HARBOUR | 1970 | West. | CG 118 Louisburg | 1975 | Mar. |
| CG 107 Burin | 1974 | Newf. | CG 140 PORT MOUTON | 1982 | Mar. |
| CG 108 TOBERMORY | 1974 | Central | CG 141 CAP AUX MEULES | 1982 | Mar. |

D: 17.9 tons (fl) **S:** 14 kts **Dim:** $13.45 \times 3.86 \times 1.01$

Electron Equipt: Radar: 1/Raytheon 1900

M: 2 G.M. 6-71 diesels; 2 props; 360 hp (294 hp sust.) Range: 150/10.5 Fuel: 1.2 tons Man: 3 tot.

REMARKS: First unit built U.S.C.G. Yard, Curtis Bay, Md. in 1967, remainder built in Canada, CG 140 and 141 by Georgetown SY, Prince Edward Isl. CG 107 and later are 485 hp.

SMALL RESCUE CRAFT (Type 100)

♦ 8 miscellaneous

| | In serv. | Region | | In serv. | Region | |
|-----------------------------|--------------|----------------|----------------|----------|-----------------------|--|
| RELITE | 1967 | West | CG 121 SORA | 1968 | Cent. | |
| SWIFT | 1981 | West | CG 122 GANGES | 1976 | West West Cent. | |
| CG 119 GREBE CG 120 TEAL | 1973 1972 | Cent. Cent. | CG 156 OSPREY | 1982 | | |
| | | | CG 157 BITTERN | 1982 | | |

AIR CUSHION VEHICLES

- ♦ 2 British Hovercraft SRN-6 class
- CG 045 CG 039
- ♦ 1 British Hovercraft SRN-5 class

CG 021

1 Bell Voyager class

DEPARTMENT OF FISHERIES AND OCEANS

FISHERIES PATROL SHIPS

 1 seagoing patrol ship Bldr: West Coast Manly SY, Vancouver, B.L.

Laid down In serv. LEONARD J. COWLEY 15-1-84 24-10-84 4-85

D: 1,470 tons light (2,080 fl) S: 12.25 kts

Dim: 72.00 (67.60 pp) × 14.00 × 4.50 (4.90 max.) M: 2 Nohab Polar F312A diesels; 1 Kort-nozzle CP prop; 3,140 hp Fuel: 400 tons Range: 12,000/12 Man: 30 crew + 10 spare

Remarks: 1,730 grt. Helo deck. Bow-thruster. For Pacific Region. Ordered 8-11-83.

• 1 research vessel Bldr: Bel-Aire SY, Vancouver

Laid down In serv. JOHN P. TULLY 30-1-84 27-10-84 5-85

D: 2,200 tons (fl) S: 14 kts Dim: 68.90 (60.00 pp) × 14.00 × 4.50

M: 2 Deutz SBV-628 diesels; 1 CP prop; 3,120 hp Fuel: 400 tons Range: 12,000/12 Man: 25 crew + 15 scientists

Remarks: 1,750 grt. For oceanographic/fisheries research and hydrographic survey.

• 1 aluminum construction Bldr: John Manly SY, Vancouver James Sinclair (In serv. 4-81) - Pacific Region



James Sinclair

1981

S: 16.5 kts Dim: 37.8 × 8.4 × . . M: 2 MTU 12V538 TB91 diesels; 2 props; 4,600 hp Electron Equipt: Radar: 2/Sperry navigational

• 1 seagoing patrol ship Bldr: Marystown SY, Newfoundland

Cygnus (In serv. 1981) - Newfoundland Region



Cygnus 1981 D: 1,461 tons (fl) S: 16 kts Dim: 62.5 × 12.2 × . . . M: 2 Nohab diesels; 1 prop; . . . hp

• 1 seagoing patrol ship Bldr: . . .

Cape Rodger (In serv. 1977) - Maritime Region

D: 1,255 tons S: . . . Dim: 87.3 × 15.2 × . . . M: Diesels; . . . props; . . . hp

 2 fisheries research boats Bldr: Ferguson, Pictou (In serv. 1981)

ALFRED NEEDLER WILFRED TEMPLEMAN

REMARKS: 50 m. o.a.; no other data available. One based at Halifax, the other at St. Johns, Newfoundland.

 2 Louisbourg class patrol/survey ships Bldr: . . . (In serv. 1977)

Louisbourg Louis M. Laurier (ex-Cape Harrison)



Louisbourg

L. & L. Van Ginderen, 10-82

D: 450 tons (fl) S: 20 kts Dim: 38.1 (36.6 pp) × 8.2 × 2.5 M: 2 MTU 12V538 TB91 diesels; 2 props; 4,500 hp

Remarks: Louisbourg patrols the Maritime Provinces region, Laurier was renamed 1984 after conversion as a survey boat by Breton Industrial & Marine, Port Hawkesbury, N.S.

 1 seagoing patrol ship Bldr: Yarrow, Esquimault

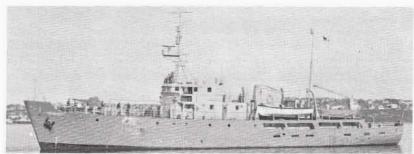
TANU (In serv. 7-9-68) - Pacific Region

D: 880 tons (925 fl) **S:** 15 kts **Dim:** 54.69 (50.06 pp) \times 32.00 \times 3.35 mean M: 2 Fairbanks-Morse 38D81/8 × 8 diesels; 1 CP prop; 2,400 hp Range: 5,000/12 Electric: 500 kw Man: 34 tot.

Remarks: Has 125 hp Pleuger active rudder. Aluminum superstructure. Similar to

 1 seagoing patrol ship Bldr: Ferguson, Pictou, N.S.

Сневисто (In serv. 1966) - Maritime Region



Chebucto—gun no longer carried

L. & L. Van Ginderen, 11-71

D: 865 tons normal S: 15 kts Dim: $54.6 \times 9.45 \times$. M: 2 Fairbanks-Morse 38D8½ × 8 diesels; 1 CP prop; 2,560 hp Range: 6,000/12 Electric: 300 kw Man: 35 tot.

PATROL BOATS

The units below run from 40-ft. (12.2 m) to 116-ft (35.5 m) in length and are listed in

| descending length. | | | | | | |
|--------------------|--------------|--------|----------|------|------|---------|
| | Displacement | Length | | Beam | Year | Region |
| GOLDEN BAY | 136 grt | 30.5 | \times | 5.4 | 1975 | Que. |
| | 148 grt | 25 | × | | 1984 | |
| CUMELLA | 80 | 23.17 | × | 5.1 | 1983 | |
| GROSWATER BAY | 80 | 23.17 | × | 5.1 | 1984 | |
| CRATENA | 94 | 20.9 | × | 4.8 | 1953 | Mar. |
| SOOKE POST | 59 grt | 20.7 | × | 5.2 | 1973 | Pac. |
| GOOSE BAY | 44 | 20.1 | × | 4.8 | 1968 | Newfdl. |
| HAWKE BAY | 44 | 20.1 | × | 4.8 | 1965 | Newfdl. |
| PISTOLET BAY | 44 | 20.1 | × | 4.8 | 1966 | Newfdl. |
| | | | | | | |

CANADA (continued)

PATROL BOATS (continued)

| BURIN BAY | 44 | 20.1 | × | 4.8 | 1967 | Newfdl. |
|--------------------|----------------|-------------|-----------|-------------|-------|-----------|
| ATLIN POST | 57 grt | 19.8 | × | 5.2 | 1975 | Pac. |
| KITIMAT II | 57 grt | 19.8 | × | 5.2 | 1974 | Pac. |
| Comox Post | 57 grt | 19.8 | × | 5.2 | 1975 | Pac. |
| CHILCO POST | 57 grt | 19.2 | × | 5.2 | 1975 | Pac. |
| GANDER BAY | 44 | 18.6 | × | 4.9 | 1969 | Newfdl. |
| GARIA BAY | 49 | 18.6 | × | 5.8 | 1961 | Newfdl. |
| BADGER BAY | 42 | 17.4 | × | 4.7 | 1954 | Newfdl. |
| Baso Reef | 48 grt | 17.1 | × | 5.1 | 1984 | Pac. |
| CUTTER ROCK | 36 grt | 16.1 | × | 4.3 | 1967 | Pac. |
| CHRISTIE BAY I | 35 | 15.8 | × | | 1972 | West. |
| STUART POST | 37 grt | 15.8 | × | 4.6 | 1973 | Pac. |
| BABINE POST | 37 grt | 15.8 | × | 4.6 | 1972 | Pac. |
| NORTH ROCK | 31 grt | 15.2 | × | 4.6 | 1975 | Pac. |
| SURGE ROCK | 33 grt | 14.6 | × | 4.3 | 1964 | Pac. |
| BOLTENIA | 29 grt | 14.6 | × | 3.7 | 1951 | Newfdl. |
| BONILLA ROCK | 41 grt | 14.6 | × | 4.6 | 1971 | Pac. |
| LOMOND | 24 grt | 14.3 | × | 4.3 | 1959 | Newfdl. |
| BEAVER ROCK | 31 grt | 14.3 | × | 4.3 | 1961 | Pac. |
| PILLAR ROCK | 31 grt | 14.3 | × | 4.3 | 1961 | Pac. |
| FALCON ROCK | 28 grt | 14.3 | × | 5.8 | 1960 | Pac. |
| BUCTOUCHE LIGHT | 20 grt | 14.0 | × | 4.0 | 1963 | Mar. |
| TEMPLE ROCK | 23 grt | 13.4 | × | 3.6 | 1960 | Pac. |
| 11A-6538 | 36 | 13.1 | × | 4.0 | 1969 | Mar. |
| 11A-6539 | 36 | 13.1 | × | 4.0 | 1969 | Mar. |
| SEAL ROCK | 24 grt | 13.1 | × | 3.6 | 1959 | Pac. |
| | 9.25 grt | 12.8 | × | 3.9 | 1984 | Mar. |
| Rustico Light | 17 grt | 12.8 | × | 4.0 | 1965 | Mar. |
| 11A-6204 | 45 | 12.8 | × | 4.0 | 1969 | Mar. |
| 11A-6206 | 45 | 12.8 | × | 4.0 | 1969 | Mar. |
| 11A-5831 | 46 | 12.8 | × | 4.0 | 1968 | Mar. |
| 11A-5832 | 46 | 12.8 | × | 4.0 | 1968 | Mar. |
| MARILLA | 10 grt | 12.8 | × | | 1955 | West. |
| 1B-1284 | | 12.8 | × | 4.6 | 1975 | Mar. |
| 1B-1452 | 45 | 12.8 | × | 4.0 | 1979 | Mar. |
| BRAMA | 20 grt | 12.5 | × | 3.7 | 1955 | Pac. |
| GAVIA | 17 grt | 12.5 | × | 3.4 | 1955 | Pac. |
| Walker Rock | 15 grt | 12.2 | × | 4.0 | 1976 | Pac. |
| STAR ROCK | 18 grt | 12.2 | × | 3.4 | 1957 | Pac. |
| 7C-109 | 30 | 12.2 | × | 3.4 | 1966 | Mar. |
| 17A-601 | 23 | 12.5 | × | 4.0 | 1976 | Mar. |
| Regions: Pac.—Paci | | | | | | |
| West. — Western | ne, que. — que | occ, iviai. | THE TOTAL | o, riewidi. | Tiewi | oundiand, |

PATROL CRAFT

The craft listed below by region are all less than 40-ft (12.2 m) in length. There are, in addition, some 500 craft of 20-ft (6.1 m) or less in service. Maritimes: La Bradelle, Johnny Hoe, 11A-5743, 11A-5830, 20A-1138, 20A-1139, 20A-1141, 20A-1142, 20A-1152, 20A-1153 — Western Region: Sangstercraft — Pacific: FD202, Petrel Rock, Anchor Rock, Babine Riwer, Canoe Rock, Crescent Rock, Gale Rock, Bertram, Beluga, Gull Rock, Heron Rock, Legace Bay, Little Atlin, Little Brama, Little Crescent, Little Falcon, Little Nahmint, Little Pillar, Little River, Little Rock, Mission Jet, Nimpkish, RD 105, Roanna, Tatchie River, Vancouver Sport Fishing, Vedder Rock, Warrior Rock, 13K49012, 13K56195, 13K76101, 13K76026, 13K76149.

Note: The Canadian Department of Energy, Mines and Resources operates a number of oceangoing survey and oceanographic research ships which, for reasons of space, cannot be listed here.

CAPE VERDE ISLANDS

Republic of Cape Verde

PERSONNEL: . . .

Merchant Marine (1984): 24 ships — 13,690 grt

PATROL BOATS

♦ 2 Soviet Shershen-class former torpedo boats

451 452

D: 180 tons (fl) **S:** 45 kts **Dim:** $34.0 \times 7.2 \times 1.5$

A: 4/30-mm AA (II \times 2) Electron Equipt: Radar: 1/Pot Head, 1/Drum Tilt

M: 3 M-503A diesels; 3 props; 12,000 hp Range: 450/34, 700/20

REMARKS: Transferred 3-, and 7-79. Torpedo tubes removed prior to transfer.

♦ 1 Soviet Zhuk class—transferred 1980

D: 60 tons (fl) S: 34 kts Dim: $24.0 \times 5.0 \times 1.8$ A: 4/14.5-mm mg (II \times 2) Electron Equipt: Radar: 1/Spin Trough M: 2 M50 diesels; 2 props; 2,400 hp

• 1 Soviet Kameuka class survey ship

Bldr: Gdansk SY, Poland

A 450 5TH JULY (In serv. 1968-72)



5th July (A 450) - with two Shershen astern

1982

D: 703 tons (fl) S: 13.7 kts Dim: 53.5 × 9.1 × 2.6 Electron Equipt: Radar: 1/Don-2 Range: 4,000/10 M: 2 diesels; 2 CP props; 1,765 hp Man: 40 tot.

Remarks: Transferred 1980 for use as a training ship. Also capable of acting as a navigational buoy tender. One 5-ton crane.

• 1 oceanographic and fisheries research ship

N. . . (ex-Fengur)

D: . . . **S:** . . . **Dim:** 27.3 × 7.4 × . . . **M:** Diesels; . . . hp

Remarks: Transferred 6-5-84 by Icelandic Government. 140 grt/60 dwt.

CHILE

Republic of Chile

Personnel (1984): 22,261 total (2,049 officers; 18,175 men; 2,037 naval infantry). Civil Service personnel number about 6,600.

Merchant Marine (1984): 219 ships - 472,934 grt (tankers: 7 - 186,700 grt)

Naval Aviation: The naval air arm has 25 aircraft (6 Embraer 111 Bandeirante and 3 Embraer 110 Bandeirante maritime surveillance aircraft, 10 Pilatus PC-7 trainers, and 6 Casa 212 Aviocar) and 19 helicopters (10 Alouette-III, 6 Bell 206A JetRanger, and 3 AS.332 Super Puma). The principal air base is at El Belloto, near Valparaiso.

SUBMARINES

♦ 2 IKL Type 1300 Bldr: Howaldtswerke, Kiel, West Germ:

Laid down L In serv. S 20 Thomson 1-11-80 28-2-82 31-8-84 S 21 Simpson 15-1-81 29-7-83 12-84



Simpson (S 21)

P. Voss, 7-84



Thomson (S 20)

HDW, 1984

SUBMARINES (continued)

D: 1,285 tons surf./1,390 submerged. S: 10/22 kts

Dim: $61.00 \times 6.20 \times 5.50$ (surf.)

A: 8/533-mm TT fwd. (16 tot. torpedoes)

Electron Equipt: Radar: 1/Calypso II

Sonar: .

M: 4 MTU 12V-493 AZ-80 diesels; 4/450-kw AEG generators; 1 Siemens electric motor; 5,000 hp

Fuel: 110 tons Range: 400/4; 16/21.5 sub; 8,200/8 snorkel

Endurance: 50 days Man: 5 officers, 26 men

Remarks: Ordered 12-80; construction encountered political opposition in West Germany. Utilized components from canceled Iranian order. Maximum snorkel speed is 12 kts. S 21, damaged in collision 29-3-84 on trials, was completed 18-9-84. S 20 was completed 7-5-84. Have larger casing than earlier IKL-designed submarines.

♦ 2 British Oberon class

| | Bldr | Laid down | L | In serv. |
|--------------|---------------|-----------|----------|----------|
| S 22 O'BRIEN | Scott Lithgow | 17-1-71 | 21-12-72 | 4-76 |
| S 23 HYATT | Scott Lithgow | 16-1-72 | 26-9-73 | 27-9-76 |



O'Brien (S 22)

G. Arra, 1977

D: 1,650/2,070/2,450 tons **S:** 15/17.5 kts **Dim:** 89.92 (87.45 pp) \times 8.07 \times 5.48

A: 8/533-mm TT (6 fwd, 2 aft) - 22 torpedoes

Electron Equipt: Radar: 1/1006—Sonar: 1/2007, 1/187, 1/197, 1/719 M: 2 1,840 hp Admiralty Standard Range 16 VVS-AS21 diesels, diesel-electric

drive; 2 props; 6,000 hp

Man: 65 tot.

Remarks: Delivery of these submarines was a year late because of a number of malfunctions in the electrical equipment. The after two "short" torpedo tubes were for countermeasures weapons and may no longer be in use.

Note: U.S. Brooklyn-class cruisers O'Higgins (02, ex-Brooklyn, CL 40) and Chacabuco (03, ex-Prat, ex-Nashville, CL 43) were stricken in 1984. Ex-Swedish cruiser Almirante Latorre (ex-Göta Lejon) decommissioned 9-84.

DESTROYERS

♦ 2 British "County"-class guided-missile destroyers

| | Bldr | Laid down | L | In serv. |
|-----------------------|----------------------|-----------|----------|----------|
| 11 CAPITAN PRAT | Swan Hunter, | 15-3-66 | 16-11-67 | 7-3-70 |
| (ex-Norfolk) | Wallsend-on Tyne | | | |
| 12 Almirante Cochrane | Fairfield SB & Eng., | 20-1-66 | 19-10-67 | 14-7-70 |
| (ex-Antrim) | Govan | | | |



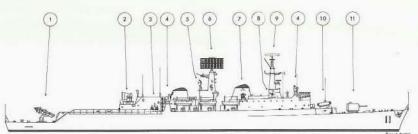
Almirante Cochrane (12)

L. & L. Van Ginderen, 8-84



Capitan Prat (11) - with Exocet missiles

Chilean Navy, 1984



Capitan Prat (11): 1. Sea Slug launcher 2. Type 901 radar director 3. Sea Cat launcher 4. MRS. 3 radar director for Sea Cat 5. Type 278 height-finding radar 6. Type 965M air early-warning radar 7. Knebworth/Corvus chaff RL 8. 20-mm AA 9. Type 9920 search radar 10. Exocet launchers 11. 114-mm Mk 6 gunmounts

D: 5,440 tons (6,200 fl) S: 32.5 kts (30 sust.)

Dim: $158.55 (153.9 \text{ pp}) \times 16.46 \times 6.3 (\text{max.})$

A: 4/MM 38 Exocet—1/Sea Slug Mk 2 syst. (II \times 1, 30 missiles)—2/Sea Cat GWS 22 Syst. (IV \times 2, . . . missiles)—2/114-mm Mk 6 DP (II \times 1)—2/20-mm AA (I \times 2)—1/helicopter

Electron Equipt: Radar: 1/978, 1/965M, 1/992Q, 1/277, 1/901, 1/903, 2/904

Sonar: 1/184, 1/162

EW: UA-8/9 passive, jammers, 2 Knebworth/Corvus chaff RL (VIII \times 2)

M: COSAG: 2 sets A.E.I. GT (15,000 hp each) and 4 English Electric G6 gas turbines (7,500 hp each); 2 props; 60,000 hp

Boilers: 2 Babcock & Wilcox; 49.2 kg/cm², 510°C Fuel: 600 tons Electric: 4,750 kw Range: 3,500/28 Man: 33 officers, 438 men

Remarks: Prat purchased by Chile, left U.K. 17-2-82, transferred 6-4-82 in Chile; Cochrane purchased 22-6-84, commissioned 25-6-84. Four pair fin stabilizers. Twin rudders. Sea Slug magazine runs 80-m long through ship, with two parallel rows of 15 missiles. Exocet missiles not aboard at time of transfer, and SCOT SATCOMM equipment deleted. Have ADAWS-1 data system. See also notes under class entry in Great Britain section.

♦ 2 Almirante Williams class

| | Bldr | Laid down | L | In serv. |
|-------------------------|-------------------|-----------|----------|----------|
| D 18 Almirante Riveros | Vickers-Armstrong | 12-4-57 | 12-12-58 | 31-12-60 |
| D 19 Almirante Williams | Vickers-Armstrong | 20-6-56 | 5-5-58 | 26-3-60 |



Almirante Riveros (D 18)

Chilean Navy, 11-83

D: 2,730 tons (3,300 fl)
 S: 34.5 kts
 Dim: 122.5 (113.99 pp) × 13.1 × 3.9
 A: 4/MM 38 Exocet −2/Sea Cat SAM systems (IV × 2) −4/102-mm DP (I × 4) −4/40-mm AA (I × 4) −6/324-mm Mk 32 ASW TT (III × 2) −2/Squid ASW mortars (III × 2)
 Electron Equipt: Radar: 1/Decca 629, 1 Plessey AWS-1, 1 Marconi SNW-10,

1/SWW-20, 2/SGR-102, 2/SNG-20

Sonar: 1/164B-EW: WLR-1 intercept

M: 2 sets Parsons-Pamatreda GT; 2 props; 50,000 hp

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm², 454°C Range: 7,800

Man: 17 officers, 249 men

Remarks: Refitted in Great Britain, D 18 in 1973-75 and D 19 in 1971-74. Dutch M-4 radar directors for Sea Cat. Exocet replaced four 533-mm TT (IV × 1); 2 Exocet removed from each and placed on Allen M. Sumner class, 1980. The 114-mm guns are unique to this class; gunhouse weight is 26 tons, muzzle velocity is 900 m/sec., firing rate is 46 rpm, range is 18,500 m, and maximum altitude is 12,000 m.

♦ 2 U.S. Allen M. Sumner FRAM II class

D: 2,200 tons (3,300 fl) **S:** 30 kts **Dim:** $114.75 \times 12.45 \times 5.8$ (sonar)

A: 2/MM 38 Exocet — 6/127-mm DP 38-cal. (II \times 3) — 2/40-mm AA (I \times 2) — 2/20-mm AA (I \times 2) — 6/324-mm Mk 32 ASW TT (III \times 2) — 2/Hedgehogs — 1 SH-57A helicopter

Electron Equipt: Radar: 1/SPS-40 (D 17) or SPS-29 (D 16), 1/SPS-10, 1/Mk 25 Sonar: 1/SQS-40—ECM: WLR-1

M: 2 sets GT; 2 props; 60,000 hp

DESTROYERS (continued)



Ministro Zenteno (D 16) - with added AA guns

U.S. Navy, 1982

Boilers: 4 Foster-Wheeler and Babcock & Wilcox; 43.3 kg/cm2, 454°C Fuel: 650 tons Range: 1,260/30; 4,600/15 Man: 14 officers, 260 men

Remarks: Purchased 8-1-74. VDS removed 1980; 2 Exocet SSM from Williams class mounted on 01 deck between stacks. By 1982, the Exocet missiles appear to have been removed, and 40-mm AA guns have been added at the forward corners of the helicopter platform. Mk 37 GFCS.

FRIGATES

2 British Leander class

| | Bldr | Laid down | L | In serv. |
|---------------|-------------|-----------|---------|----------|
| PF 06 CONDELL | Yarrow & Co | 5-6-71 | 12-6-72 | 21-12-73 |
| PF 07 LYNCH | Yarrow & Co | 6-12-72 | 6-12-73 | 25-5-74 |



Condell (PF 06) - in camouflage paint

Chilean Navy, 1983



Lynch (Pf 07)

U.S. Navy, 1985

D: 2,500 tons (2,962 fl) S: 27 kts Dim: 113.38 (109.73 pp) × 13.12 × 5.49 (fl) A: 4/MM 38 Exocet - 2/114-mm Mk VI DP (II × 1) - 1/Sea Cat SAM system (IV \times 1; 16 missiles) — 2/20-mm AA (I \times 2) — 6/324-mm ASW TT (III \times 2) —1 helicopter

Electron Equipt: Radar: 1/978, 1/965, 1/992 Q, 1/903, 1/904 Sonar: 1/177, 1/170B, 1/162—EW:UA-8/9 intercept, 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 2 sets GT; 2 props; 30,000 hp Boilers: 2 Babcock & Wilcox; 38.7 kg/cm², 450°C Electric: 2,500 kw Fuel: 500 tons Range: 4,500/12 Man: 263 tot.

Remarks: Ordered 14-1-70. GWS 22 FCS for Sea Cat, MRS 3 GFCS for 114-mm. Exocet missiles at stern in lieu of Limbo ASW mortar. The Chilean Navy has expressed a desire to purchase two ex-RN units of this class, when available.

Note: The last of the U.S. Charles Lawrence-class frigates (ex-ADP fast transports), Virgilio Uribe (ex-Daniel Griffin, APO 38, ex-DE 54), was stricken 1984.

CORVETTES

 1 U.S. Abnaki-class former fleet tug Bldr: Charleston SB & DD Co., S.C.

Laid down L In serv. 63 Sergente Aldea (ex-Arikara, ATF 98) 28-11-42 22-4-43 15-11-43



Sergente Aldea (63)

Chilean Navy

D: 1,235 tons (1,675 fl) S: 15 kts

Dim: 62.48 (59.44 wl) × 11.73 × 4.67 A: 1/76.2-mm DP Mk 26 - 2/20-mm AA

Electron Equipt: Radar: 1/SPS-5

M: Diesel-electric: 4 Busch-Sulzer BS539 diesels; 1 prop; 3,000 hp

Electric: 400 kw Fuel: 363 tons Range: 7,000/15; 15,000/8 Man: 85 tot.

Remarks: Transferred 1-7-71 on lease.

♦ 2 U.S. Sotoyomo-class former auxiliary ocean tugs Bldr: Levingston, SB, Orange, Texas

Laid down In serv. 2-9-44 60 LIENTUR (ex-ATA 177) 27-4-44 5-6-44 19-10-42 27-11-42 10-6-43 62 Lautaro (ex-ATA 122)



Lautaro (62)

Chilean Navy

D: 534 tons (835 fl) S: 13 kts Dim: 43.59 (41.00 pp) × 10.31 × 4.01 A: 1/76.2-mm DP Mk 26-4/20-mm AA (II × 2)

Electron Equipt: Radar: 1/Decca 505

M: 2 G.M. 12-278A diesels, electric drive; 2 props; 1,500 hp

Electric: 90-120 kw Fuel: 171 tons Range: 16,500/18 Man: 46 tot.

REMARKS: Purchased 9-47.

GUIDED-MISSILE BOATS

♦ 3 (+2) Israeli Reshev (Sa'ar IV) class Bldr: Israeli SY, Haifa

| | L | In serv. | Transferred |
|---------------------|---------|----------|-------------|
| Casma (ex-Romach) | 1-74 | 3-74 | 12-79 |
| Chipana (ex-Keshet) | 23-8-73 | 10-73 | 1-81 |
| N (ex-Reshev) | 19-2-73 | 4-73 | 2-84 |
| N (ex) | | | |
| N (ex) | | | |

GUIDED-MISSILE BOATS (continued)

D: 415 tons (450 fl) S: 32 kts Dim: 58.10 × 7.60 × 2.40

A: 6/Gabriel SSM (I × 6) -2/76-mm DP OTO Melara (I × 2) -2/20-mm AA $(I \times 2) - 2/12.7$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/Neptune, 1/EL/M-2221 f.c. (Orion) EW: passive syst. - 4 large/72 small chaff RL

M: 4 MTU MD 871 diesels; 4 props; 14,000 hp Range: 1,500/30; 4,000/17 Man: 45 tot.

REMARKS: Harpoon SSM removed prior to transfer. Transfer of Reshev and two scheduled for 1985 uncertain.

TORPEDO BOATS

 4 Guacolda (Lürssen 36-m design) class serv. 1965-66)

Bldr: Bazán, Cadiz, Spain (In

81 Fresia 82 Guacolda 83 Quidora 84 Tehualda



Guacolda class

Chilean Navy, 1985

D: 134 tons (fl) S: 30 kts Dim: 36.2 (34.0 wl) × 5.6 × 1.68

A: 2/40-mm AA - 4/533-mm TT (British Mk IV)

Electron Equipt: Radar: 1/Decca 505

M: 2 Mercedes-Benz MB839Bb diesels; 2 props; 4,800 hp Electric: 90 kVA Range: 1,500/15 Man: 20 tot.

PATROL BOATS

♦ 1 U.S. PC 1638-class submarine chaser

Bldr: ASMAR, Talcahuano

In serv. P 37 PAPUDO (ex-U.S. PC 1646) 27-11-71



Papudo (P 37)

1977

D: 313 tons (417 fl) S: 20 kts Dim: 52.9 × 7.0 × 3.1

A: 1/40-mm AA-4/20-mm AA (II × 2)-1/trainable Mk 15 Hedgehog-4/Mk 6 d.c. throwers-1 d.c. rack

M: 2 G.M. 16-567 diesels; 2 props; 2,800 hp Fuel: 60 tons Range: 5,000/10

Remarks: The construction of two additional units of this class, to be named Abtao (P. 36) and Pisaqua (P 38), was canceled.

♦ 2 small trawler-type Bldr: ASMAR, Talcahuano, 1966-67

PC 75 Marinero Fuentalbas PC 76 Cabo Odger

D: 215 tons S: 9 kts Dim: 24.4 × 6.4 × 2.75 A: 1/20-mm AA

M: 1 Cummins diesel; 340 hp Range: 2,600/9

Remarks: Purchased 1966.

 2 patrol launches Bldr: MacLaren, Niteroi, Brazil (In serv. 11-82)

ONA YAGAN

D: 14 tons (fl) **S**: 19 kts **Dim**: $13.2 \times 3.6 \times 1.1$

A: . . . M: 2 MTU GV 331 TC82 diesels; 2 props; 1,320 hp

Remarks: Built as compensation for the late delivery of "Anchova"-class patrol boats for the Chilean Coast Guard. One based at Puerto Montt, the other at Chiloe.

HYDROGRAPHIC SURVEY AND RESEARCH SHIPS

♦ 1 U.S. Cherokee-class former fleet tug land, Ore.

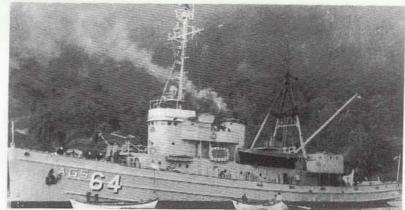
Bldr: Commercial Iron Wks, Port-

AGS 64 YELCHO (ex-USS Tekesta, ATF 93)

Laid down 7-9-42

20-3-43

In serv. 16-8-43



Yelcho (AGS 64)

AP 45 PILOTO PARDO

1970

D: 1,235 tons (1,675 fl) **S:** 15 kts **Dim:** 62.48 (59.44 wl) \times 11.73 \times 4.67 **A:** 1/76.2-mm Mk 26 DP — 2/20-mm AA **Electric:** 260 kw

M: 4 G.M. 12-278 diesels, electric drive; 1 prop; 3,000 hp Fuel: 363 tons Range: 7,000/15; 15,000/8 Man: 5 officers, 59 men

Remarks: Used for oceanographic research. Loaned 15-5-60. Carries survey launch on fantail

1 Antarctic patrol, transport, and research ship

Laid down Haarlemsche Scheepsbouw

T.

In serv. 1957 1958 8-58



Piloto Pardo (AP 45)

1977

D: 1,250 tons (2,545 fl) **S**: 14 kts **Dim**: 83.0 × 11.9 × 7.4 (fl) M: Diesel-electric propulsion; 1 prop; 2,000 hp Range: 6,000/10 Man: 44 crew, 24 passengers

Remarks: Armament removed; can carry 2 Bell 47-G helicopters.

AUXILIARY SHIPS AND SERVICE CRAFT

1 U.K. "Later Tide"-class replenishment oiler Hebburn-on-Tyne

Bldr: Hawthorn Leslie,

AO 52 Almirante Montt (ex-Tidepool)

Laid down 4-12-61

In serv. 11-12-62 28-6-63



Almirante Montt (AO 52) as Tidepool

L. & L. Van Ginderen, 7-81

D: 8,531 tons light (27,400 fl) S: 18.3 kts **Dim:** $177.60 (167.65 \text{ pp}) \times 21.64 \times 9.75$

Electron Equipt: Radar: 1/Kelvin-Hughes 14/12, 1 Kelvin-Hughes 14/16

M: 1 set Pametrada GT; 1 prop; 15,000 hp

Boilers: 2 Babcock & Wilcox, 60 kg/cm2, 510°C Man: 110 tot.

Remarks: Sold to Chile and was to have been transferred 2-4-82 at Valparaiso; repossessed because of Argentine invasion of Falklands, returned and commissioned in Chilean Navy 8-82. 14,130 grt/18,900 dwt. Cargo: Approx. 18,000 tons liquid. Hangar and flight deck for one large helicopter.

AUXILIARY SHIPS AND SERVICE CRAFT (continued)

1 replenishment oiler

Bldr: Burmeister & Wain, Copenhagen

AO 53 ARAUCANO

In serv. 21-6-66 10-1-67

Araucano (AO 53)

1977

D: 23,000 tons (fl) S: 17 kts Dim: 160.93 × 21.95 × 8.8 A: Removed M: Burmeister & Wain diesel, type 62 VT 2 BF 140, 9-cyl.; 1 prop; 10,800 hp Range: 12,000/14.5

Remarks: Can replenish two ships at sea simultaneously. Carries 21,126 cu. meters liquid and 1,444 cu. meters dry cargo. Can carry 8/40-mm AA (II \times 4).

Note: The U.S. Patapsco-class tanker Beagle (AOG 54, ex-Genesee, AOG 8) was stricken in 1983.

1 small tanker

Bldr: Marco SY, Iquique (In serv. 1966)

AO 55 GUARDIAN BRITO (ex-Silvia)

D: 482 tons (fl) S: 10 kts Dim: 39.60 × 7.44 × 3.30 (max.) M: MWM diesel; . . . hp Range: 3,000/8 Man: 1 officer, 7 men

Remarks: Acquired 13-1-83 from the Ultramar Co. Based at Punta Arena. Also in service is Aquila (AO 48); see addenda.

♦ 2 (+1) French BATRAL-class landing ship/transports Talcahuano

Bldr: ASMAR,

R 91 Maipo 26-9-81 R 92 RANCAGUA 26-3-82 In serv. 12-82 1-7-83

R 93 CHACABUCO R 94 N. . .

In serv. 16-7-85 1986



Maipo (R 91)

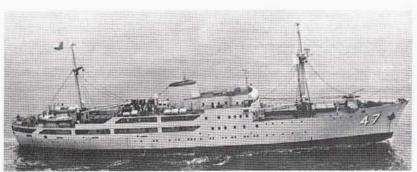
AP 47 AQUILES (ex-Danish Tjaldur)

Chilean Navv, 12-82

D: 770 tons (1,330 fl) S: 16 kts (13 sustained) Dim: 80.0 (68.0 pp) × 13.0 × 3.0 (max.) A: 2/20-mm AA (I × 2) M: 2 SACM V-12 diesels; 2 props; 3,600 hp Range: 4,500/13 Man: 40 tot.

Remarks: Constructed with French technical assistance. Cargo: 350 tons. Bow ramp, helicopter platform. Can carry 138 troops.

• 1 transport, former passenger-cargo ship Bldr: Aalborg Vaerft, 1953



Aquiles (AP 47)

Chilean Navy, 1983

D: 3,400 tons (fl) S: 16 kts Dim: 87.8 (82.0 pp) × 13.42 × 5.2 A: 2/40-mm AA (I × 2) - 2/20-mm AA (I × 2) M: 1 Burmeister & Wain diesel; 1 prop; 3,600 hp Range: 5,500/16 Man: 32 crew, 447 troops

Remarks: Former mixed-cargo ship purchased in 1967. 2,660 grt/1,395 dwt.

Note: U.S. LST 542-class former tank-landing ship Comandante Hemmerdinger (AP 88, ex-New London County, T-LST 1066) was stricken in 1982.

♦ 2 Orompello-class landing ships

AP 94 OROMPELLO Bldr: Dade DD Co., Miami, Fla. (In serv. 15-9-64) AP 95 ELICURA Bldr: ASMAR, Talcahuano (In serv. 10-12-63)

D: 290 tons (750 fl) S: 12 kts Dim: 43.9 (42.05 pp) × 10.3 × 6.9 A: 3/20-mm AA Electron Equipt: Radar: 1 Raytheon 1500B Electric: 120 kw M: 2 Cummins VT-17-700M diesels; 2 props; 900 hp Fuel: 71 tons Range: 2,900/10.5 Cargo: 350 tons Man: 20 tot.

♦ 1 Meteoro-class coastal ferry

Bldr: ASMAR, Talcahuano

AP 110 METEORO

(In serv. 1967)

D: 205 tons (fl) S: 8 kts Dim: 24.4 × 6.7 × . . . M: Diesel Man: 220 passengers

Remarks: Sister Grumete Perez Huemel (AF 112) has been stricken.

Bldr: Orenst & Koppel, Germany (In serv. 1966) 1 submarine tender

70 Angamos (ex-Puerto Montt, ex-Danish Kobenhavn) D: 3,560 tons S: 16 kts Dim: 93.92 × 16.2 × 4.5 M: 2 Lind-Pielstick V-8 diesels; 2 props; 6,500 hp

Remarks: Former car and passenger ferry, purchased 4-77 and in service in 1979. Now fitted with workshops, spare parts stores, ammunition and torpedo magazines. 4,616 grt. Also used as a transport.

♦ 1 sail-training ship

BE 43 ESMERALDA (ex-Don Juan de Austria)

Bldr Bazán, Cadiz L

In serv. 12-5-53

9-54

Esmeralda (BE 43)

Chilean Navy

D: 3,673 tons S: 11 kts Dim: 94.1 × 13.1 × 8.7 A: 4/47-mm saluting M: Fiat diesel; 1,400 hp Range: 8,000/8 Man: 271 crew, 80 midshipmen

REMARKS: Four-masted schooner, ordered by Spain, sold to Chile in 1953. Similar to the Spanish Juan Sebastian de Elcano. Refitted in South Africa, 1977. The small yacht Blanco Estella (14 crew) is also used for training.

♦ 1 buoy tender and lighthouse-servicing ship

ATA 73 COLO COLO Bldr: Bow, McLachlan, Paisley, U.K. (In serv. 1929)

D: 790 tons S: 11 kts Dim: 41.38 × 8.72 × 4.07 M: 1 set triple-expansion, reciprocating; 1 prop; 1,050 hp Boilers: 2 Fuel: 155 tons

♦ 1 tug

YT 115 GALVEZ Bldr: Southern Shipbuilders, U.K. (In serv. 1975)

D: 112 grt S: . . . Dim: 25.5 × 7.3 × 2.8

Note: Tugs Reves (YT 120) and Cortez (YT 128) were stricken 1983.

♦ 1 10,000-ton capacity floating dry dock Bldr: ASMAR, Talcahuano

Valparaiso III (L: 8-10-83) D: 4,150 tons (light) Dim: 167.0 × 33.0 (26.1 interior width) × 3.95

Remarks: Built for shipyard, rather than naval service, but available to the Navy.

2 U.S. ARD 24-class floating dry docks (In serv. 1944)

131 Ingeniero Mery (ex-ARD 25) 132 Mutilla (ex-ARD 32)

Capacity: 3,500 tons Dim: 149.86 × 24.69 × 1.73 (light)

Remarks: 131 leased 15-12-60; 132 transferred 20-8-73. Both at Talcahuano. Dock inside dimensions: 118.6-m on blocks, 18.0-m clear width, 6.3-m draft over blocks. Bow end pointed.

1 small floating dry dock (In serv. 1908)

CHILE (continued)

CHILEAN COAST GUARD

PATROL CRAFT

 10 "Anchova"-class patrol craft 1980-82)
 Bldr: MacLaren, Niteroi, Brazil (In serv.

GC 1801 PILLAN GC 1805 CORCOVADO GC 1808 OSORNO GC 1802 TRONCADOR GC 1806 LLAINA GC 1809 CHOSHUENCO GC 1803 RANO-KAU GC 1807 ANTUCO GC 1810 COPAHUE GC 1804 VILLARRICA

D: 31 tons (43 fl) S: 25 kts Dim: 18.60 × 5.25 × 1.62

A: 2/20-mm AA (I × 2) -2/d.c. racks Electron Equipt: Radar: 1/Decca 110

M: 2 MTU 8V331 TC 81 diesels; 2 props; 1,800 hp

Range: 700/15 Electric: 10 kw

Remarks: Ordered 1977. Wooden construction. Named for volcanoes ("Anchova" is the builder's class name). Last pair delivered 16-11-82.

♦ 1 hospital craft Bldr: ASMAR, Talcahuano (In serv. 1964)

CIRUJANO VIDELA

D: 140 tons (fl) S: 14 kts Dim: 31.0 × 6.5 × 2.0

M: 2 Cummins VT-12-700M diesels; 2 props; 1,400 hp Electric: 60 kw

Remarks: Modified U.S. PGM 59 gunboat design, with enlarged superstructure. Originally used by Navy for civil assistance programs but later transferred to Coast Guard for same function.

♦ 13 search-and-rescue craft Bldr: ASENAV, Valdivia (In serv. 1981-84)

LPM 1901-1913

D: 14 tons (fl) S: 18 kts Dim: 13.3 × 3.5 × 1.0 M: 2 MTU 6V331 TC92 diesels; 2 props; 1,320 hp

Remarks: Names include: Aquila, Arica, Calle-Calle, Corrae, Punta Gruesa.

• 1 service launch for search and rescue at Easter Island

Кімітані (In serv. 1981) — D: 14 tons S: 17 kts.

CHINA

People's Republic of China

Personnel: 126,000 men in the following categories:

Regular naval: 36,000 afloat/32,000 ashore

Naval air arm: 30,000, Marine Corps: 28,000. There are also about 1,000,000 paramilitary personnel in the Naval Militia.

Merchant Marine (1984): 1,262 ships — 9,300,358 grt (tankers: 136 ships — 1,343,220 grt)

Note: This does not include the large number of ships involved only in coastal trade.

Naval Aviation: The naval air arm, which is under the control of the navy, consists of about 850 aircraft, including 600 Fagot, Fantan-A (50), Farmer (300), and Fresco fighters, 150 Badger, Bat, and Beagle light bombers, and about 60 transports, 20 Madge (Be-6) seaplanes, and 40 Mi-4 (H 4) Hound and 6 French-supplied Super Frelon helicopters. Its principal mission is defense of the coast and of naval surface forces near the coast. A few of the aircraft are believed to be equipped for minelaying. Control of naval aircraft is integrated with the continental air-defense system. The Badger bombers are being equipped with C 801 (Styx-copy) anti-ship missiles; these are also land-launched from tracked vehicles. These missiles are 7.381-m long, travel at Mach 0.9, and have a 95–100-km range.

Warships In Service Or Under Construction As Of 1 January 1986

| | | lons | |
|--------------------|---------|------------|---------------------------------------|
| | L | (Surfaced) | Main armament |
| 114 (+) submarines | | | |
| 2 (+2) Xia | 1981 | | 12 CSS-NX-3, TT |
| 3 (+1) HAN | 1971-83 | | TT |
| 1 Golf | 1964 | 2,300 | 3 ballistic missiles, 10/533-mm TT |
| 3 Ming | 1975-82 | 1,500 | 8/533-mm TT |
| 84 Romeo | 1964 on | 1,330 | 8/533-mm TT |
| 21 Whiskey | 1960-64 | 1,050 | 6/533-mm TT |
| 19 destroyers | | | |
| | | Tons | |
| 15 Luda | 1970-83 | 3,960 | 4/130-mm, 6 Styx |
| 4 Gordyy | 1938-40 | 1,660 | 4/130-mm, 4 Styx |
| | | | |

| 28 frigates | | | |
|---------------------------------|---------|-------|------------------|
| 0 (+2) | 1986? | | |
| 17 Jianghu | 1974-84 | 1,600 | 2/100-mm, 4 Styx |
| 2 Jiangdong | 1972-75 | 1,800 | 4/100-mm, 2 SAM |
| 5 Jiangnan | 1966-68 | 1,400 | 3/100-mm |
| 4 Riga | 1953-56 | 1,420 | 3/100-mm, 2 Styx |
| | | | |

- ♦ 190-195 guided-missile patrol boats
- ♦ 230 torpedo boats
- ♦ 500+ patrol boats and craft
- ♦ 115-120 minesweepers
- ♦ 500+ amphibious ships and craft

WEAPONS AND SENSORS

China at present manufactures nearly all of its own weapons and sensors, although most designs are based directly on Soviet or Western designs. Two versions of the Soviet SS-N-2a Styx are in use, the Hai Ying-2 (also known as the CSS-N-1) and a lengthened version known in the West as the CSS-N-2 and employed only on the Luda-class destroyers. A smaller, rocket-powered anti-ship missile was shown to the public in 9-84. China's only naval surface-to-air missile, intended for the two Jiangdong-class frigates, has been in development since the 1960s and may finally have entered service in 1983-84. Guns are all based on Soviet models, but China has developed unique naval mountings, including a twin 57-mm weapon and a side-by-side twin 14.5-mm mg mount also used by the Romanian Navy. The ASW rocket launcher used on the Luda-class destroyers is a 12-tubed, Chinese-designed version of the Soviet RBU-1200, with a range of 1,200 m. A Chinese ASW torpedo has been in development since the 1970s, but China was attempting in 1985 to obtain a license to build the U.S. Mk 46.

Radars are, with a few exceptions, known by their Western nicknames:

| Name | Origin | Band | Function |
|-------------|----------|------|---|
| Ball End | U.S.S.R. | E/F | Surface search |
| Bean Sticks | China | S | Early warning |
| Eye Shield | China | E/F | Surface search (Chinese name: MX-902) |
| Fin Curve | U.K. | I | Nav. (Decca 707 copy) |
| Fog Lamp | China | H/I | SAM f.c. |
| Neptun | U.S.S.R. | I | Nav. |
| Pot Head | U.S.S.R. | I | Nav./surface search |
| Rice Lamp | China | I | Gun control |
| Rice Screen | China | ? | 3-D air search |
| Skin Head | U.S.S.R. | I | Surface search |
| Slim Net | U.S.S.R. | E/F | Air/surface search |
| Square Tie | U.S.S.R | | Surface search (Chinese name: Type 331) |
| Sun Visor | U.S.S.R. | I | Gun f.c. |
| Type 756 | China | S | Nav. |

IFF systems have only come into general use since the early 1980s and are still not universally fitted. The equipment includes the Soviet Square Head interrogation antenna and the High Pole A transponder. Sonars are of Soviet design.

CLASS NAMES AND PENDANTS

The class names used below are generally those assigned by Western intelligence services; the Chinese Navy uses a numbered system, for which few of the designations are known.

For combatants, three-digit hull numbers are assigned: 100—destroyers; 200, 300, 400—submarines; 500—frigates; 600 and 700—coastal patrol/subchasers; 800—mine warfare; 900—amphibious warfare. Small combatants have a four-digit pendant, the first number of which signifies area subordination. Auxiliaries have three-digit numbers preceded by a letter signifying function:

 $\begin{array}{lll} B-Cable layer & Q-Crane \\ C-Icebreaker & S-Research ship \\ E-Diving tender & T-Tug (all types) \\ H-Buoy tender & U-Repair \\ J-Salvage and rescue & w-Dredge \\ (submarine-associated) \\ K-Hydrographic survey \\ L-Dry cargo/stores & Y-Dry cargo/transport \\ \end{array}$

In addition, the numerous ships subordinated to the various districts of the Maritime Border Defense Force have four-digit pendants preceded by a letter signifying the district; known prefixes include "S" for Shenyang, "N" for Nanjing (commonly seen in the Shanghai area), and "G" for Guangzhou.

BALLISTIC MISSILE SUBMARINES

◆ 2 (+2) Xia class Bldr: Huludao SY (In serv. 1986-87-. . .)

406 (L: 4-81) . . . (L: 1982)

D: 7,000 tons submerged **S:** 20 kts sub. **Dim:** 120.0 × 10.0 × . . .

A: 12 CSS-NX-3 strategic missiles - . . . /TT

M: 1 pressurized water nuclear reactor, turbo-electric drive; 1 prop; . . . hp

Remarks: The first "Xia" (western nickname)-class submarine was launched in 4-81 from the same facility that builds the Han-class nuclear-powered attack submarine—

BALLISTIC MISSILE SUBMARINES (continued)

Huludao shipyard, 200 km northeast of Peking in Liao Ning province. At least two additional units are expected. The first CSS-NX-3 submerged launch took place on 12-10-82 to a range of 1,600 km from the Golf-class trials submarine. The missile is believed to have 2 solid-propulsion stages and to have a range of 1,500 n.m. (2,795 km).

♦ 1 Soviet Golf Class

D: 2,300/2,700 tons **S**: 12 kts submerged **Dim**: $100.0 \times 8.5 \times 6.6$

A: 3 ballistic missiles — 10/533-mm TT (6 fwd, 4 aft)

M: 3 diesels, electric drive; 3 props; 6,000 hp Range: 9,000/5

REMARKS: Plans furnished by the Soviet Union at a time when relations between the two countries were good. Launched first Chinese SLBM on 12-10-82.

SUBMARINES

♦ 3 (+1) Han class, nuclear

| | Bldr | Laid down | L | In serv. |
|-----|------------|-----------|------|----------|
| 401 | Huludao SY | 1965-68 | 1972 | 1974 |
| 402 | Huludao SY | | 1977 | 1980 |
| 403 | Huludao SY | | 1983 | 21-9-84 |
| | Huludao SY | | | |

D: 4,500 tons submerged **S:** 25 kts surf./30 kts sub. **Dim:** $90.0 \times 8.0 \times ...$

M: 1 pressurized water nuclear reactor, turbo-electric drive; 1 prop (?); . . . hp

Remarks: The trials series for the first unit were very protracted. The class is believed to be intended to consist of 4 units.

Bldr: . . . ♦ 3 Ming class

D: 1,500/1,900 tons **S**: 17/15 kts **Dim**: $76.0 \times 6.7 \times 5.0$

A: 6/533-mm TT M: Diesel-electric; 1 prop

REMARKS: First two launched 1975; third launched 1982. Evidently a Chinese design derived from the Romeo.

Bldrs: Wuzhang, Guangzhou, Jiangnan, and Huludao ♦ 84 Soviet Romeo class shipyards (In serv. 1960-1982)



Romeo 267

R. Gillett, 9-84



Romeo 260

5-84

D: 1,319/1,712 tons **S**: 15.2/13 kts **Dim**: $76.60 \times 6.70 \times 4.95$

A: 8/533-mm TT (6 fwd/2aft) - 14 torpedoes or 28 mines

Electron Equipt: Radar: 1/Snoop Plate - Sonar: Tamir-5L active, Feniks passive

M: Diesel-electric: 2 diesels, 2,000 hp each; 2 props; 2,700 HP - 2 electric creep motors: 100 hp

Endurance: 60 days, 224-cell battery: 6,000 Amp Hr.

Range: 14,000/9 surf.; 350/9 sub. Man: 53 men

Remarks: Diving depth: 270 meters. Foreign transfers include 7 to North Korea between 1973 and 1975, 4 to Egypt in 1982-83.

♦ 21 Soviet Whiskey class Bldr: 15 at Jiangnan SY, 6 at Wuzhang, SY

D: 1,050/1,350 tons **S:** 17/13.5 **Dim:** $76.0 \times 6.3 \times 4.8$

A: 6/533-mm TT (4 fwd, 2 aft) — 12 torpedoes or 24 mines

Electron Equipt: Radar: 1/Snoop Plate - Sonar: Tamir-5L active; . . . passive

M: Diesel-electric: 2 Type 37D diesels; 2,000 hp each; 2,500 hp

Range: 8,300/8 snorkel

Remarks: A few were delivered by the U.S.S.R., the others were built in China (1960-64), probably at the Jiangnan Shipyard near Shanghai. Several retain a twin 25-mm AA in a semi-enclosed mount at the base of the forward end of the sail. About 6 are believed to be in reserve or in reduced commission for training.

DESTROYERS

 15 Luda class Bldr: Luda SY, Guangzhou SY, and Zhonghua SY, Shanghai (In serv., 1972-1984)

105, 106, 107, 108, 109, 110, 111, 131, 132, 133, 161, 162, 163, 164, 165



Luda 132 - with 8/57-mm AA, two f.c. radars

R.N.Z.N., 1980



Luda 110 - with 8/37-mm AA

R. Gillett, 9-84

D: 3,960 tons (fl) S: 32 kts Dim: 131.0 × 12.7 × 4.8

A: 6/CSS-N-2 Styx SSM (III × 2) -4/130-mm DP (II × 2) -8/57-mm or 37-mm AA (II × 4) - 4/25-mm AA (II × 2) - 2 12-tubed ASW RL - 4/BMB-2 d.c. mortars — 2/d.c. racks — mines

Electron Equipt: Radar: 1/Fin Curve or Type 756 navigational, 1/Eye Shield

(MX-902) short-range air-search, 1 Bean Sticks or Pea Sticks (antenna variant) long-range air-search, 1/Square Tie, 1/Sun Visor (not on all) 2/Rice Lamp for 57-mm f.c. (not on all)

Sonar: . . . EW: 2/Watch Dog

IFF: 3/Square Head interrogators, 1/High Pole A transponder

M: 2 sets GT; 2 props; 60,000 hp Boilers: 4 Range: 4,000/15 Man: 300 tot.

REMARKS: Superficially resembles Soviet Kotlin, but is larger and has a flat transom stern, larger superstructure, etc. Some systems of Soviet design; the ASW rocket launchers are derived from the Soviet RBU-1200 design, but have more tubes. Equipment varies greatly from ship to ship, with only a small number having fire-control radar systems, even on the Soviet Wasp Head 130-mm GFCS. The SSM used is derived from the Soviet SS-N-2 Styx, but is longer. One ship of this class (probably 160) lost 8-78 near Zanjiang through explosion. All equipped for underway fuelling.

Ludas 105, 108, and 132 are the only units confirmed to mount twin 57-mm vice 37-mm AA; they also carry the Rice Lamp AA fire-control radars not mounted on the others. Pea Sticks long-range air search is carried by 107, 131, and 162; the remainder have Bean Sticks. Sun Visor fire-control radars are mounted on the Wasp Head directors for the 130-mm DP guns only on 105, 108, 131, 161, and 162. Plans to modernize these basically excellent platforms with British equipment fell through in 1983. In 1985 it was announced that U.S. MK15 CIWS (Vulcan/Phalaux) would be added, along with U.S. Mk 46 ASW torpedoes and, possibly, ASW helicopters (Kaman SH-2F Lamps I) in a few.

♦ 4 Soviet Gordyy-class

| | Bldr | L | In serv. |
|-------------------------------|--------------------------|------|----------|
| 101 Anshan | Dalzavod SY, Vladivostok | 1938 | 1940 |
| (ex-Razyaschiy) | | | |
| 102 Zhangzhun | Dalzavod SY, Vladivostok | 1939 | 1941 |
| (ex-Reshitel'nyy, ex-Pritkiy) | | | |
| 103 Ji Lin | Komsomolsk SY | 1940 | 1941 |
| (ex-Retivyy) | | | |
| 104 Fu Zhun | Komsomolsk SY | 1939 | 1942 |
| (ex-Rezkiv ex-Pospenshnyv) | | | |

D: 1,657 tons (2,039 fl) S: 38 kts when built, certainly much less today Dim: $112.86 \times 10.20 \times 3.8$ Range: 800/38; 2,600/20 Man: 197 tot. A: 4/HY-2 SSM (II × 2) - 4/130-mm (I × 4) - 8/37-mm AA (II × 4) - mines

Electron Equipt: Radar: 1/Fin Curve, 1/Square Tie - Sonar: none M: 2 sets GT; 2 props; 48,000 hp Boilers: 3 Fuel: 500 tons

Remarks: All assembled in Far East from prefabrications by 61 Kommuna SY, Nikolayev. Transferred by the U.S.S.R., two in 12-54, the others in 7-55. The SSM, derived from the Soviet SS-N-2 Styx, replaced 6/533-mm TT (III \times 2) between 1972 and 1974. No ASW armament.

FRIGATES

♦ 0 (+2 + . . .) new construction Bldr: Jiangnan SY, Shanghai

Remarks: A new class of frigates with CODOG propulsion systems incorporating the LM-2500 gas turbine was commenced in 1984-85. Armament will include the French 100-mm Compact DP gun and the U.S. Mk 15 CIWS. A displacement of "2,000 tons" is reported.

• 17 Jianghu class, guided-missile

Bldr: Hudong SY, Shanghai (1975-84)

509-516, 518, 521, 524-527, 533, 534, 551



Jianghu 512 - rectangular stack, single 100-mm mounts, no Eye Shield radar

1983



Jianghu 533 — with twin 100-mm mounts, Eye Shield radar, and rounded stack Chinese Navy, 1984

D: 1,586 tons (1,900 fl) S: 25.5 kts Dim: 103.2 × 10.2 × 3.05 (hull)

A: 4/HY-2 Styx SSM (II \times 2) — 2/100-mm DP — 12/37-mm AA (II \times 6) — 2 or 4/RBU 1200 (V \times 2 or 4) — 4/BMB-2 d.c. mortars — 2/d.c. racks — mines (533, 534 have 2 twin 100, only 4 twin 37-mm)

Electron Equipt: Radar: 1/Eye Shield (MX-902) air search, 1/Square Tie f.c.,

1/Type 756 navigational Sonar: 1/medium freq. — EW: None IFF: 2/Square Head, 1/High Pole A

M: 2/SEMT-Pielstick diesels; 2 props; 16,000 hp Range: 4,000/15; 1,750/25 Endurance: 15 days Man: 195 tot.

Remarks: First launched 1975. A variation of the Jiantung class with SSM vice SAM. Have only an optical rangefinder for 100-mm fire control.

Early units (509-516 had bow bulwarks and a rectangular stack. Later ships have a rounded stack, while 533 and 534, with twin 100-mm gunmounts, omitted the bow bulwarks and deleted two of the twin 37-mm AA mounts to save top weight. Most have only 2 RBU-1200 ASW RL, while 515, 516, and units in the S 21 series have 4 RBU-1200. Two with twin 57-mm AA vice 100-mm guns were delivered to Egypt 1984-85.

♦ 2 Jiangdong-class guided missile Bldr: Hudong SY, Shanghai 531 Zhongdong (In serv. 1972) 535 N. . . (In serv. 1975)



Zhongdong (531) - with two Gordyy-class destroyers in the background

1982



Zhongdong (531) - with new radars installed

1983

D: 1,568 tons (1,900 fl) S: 25.5 kts Dim: 103.2 × 10.2 × 3.05 (hull)

A: 2/SAM systems — 4/100-mm DP (II × 2) — 8/37-mm AA (II × 4) — 2/RBU-1200 (V × 2) — 2/BMB-2 d.c. mortars — 2/d.c. racks

Electron Equipt: Radar: 1/Type 756 nav., 1/Rice Screen, 2/Fog Lamp, 1/Rice Lamp, 1/Sun Visor

Lamp, 1/Sun Visor Sonar: 1/MF hull-mounted—EW: None

IFF: 1/High Pole A transponder

M: 2 SEMT-Pielstick diesels; 2 props; 16,000 hp Range: 4,000/15; 1,750/25 Endurance: 15 days Man: 195 tot.

Remarks: SAM systems, of Chinese design, may recently have achieved operational status. A Fog Lamp missile f.c. radar is now mounted on the foremast, with a second aft. A Rice Screen phased-array 3-D air-search radar antenna surmounts the foremast, and a Rice Lamp gun f.c. radar is atop the aftermast.



Jianghu 514

FRIGATES (continued)

♦ 5 Jiangnan class 1964-68)

Bldr: Shantou SY and Jiangnan SY, Shanghai (In serv.

501 502 503 504 508



Jiangnan-class frigate 504

U.S. Navy, 1983

D: 1,400 tons (fl) **S:** 28 kts **Dim:** $92.0 \times 10.2 \times 3.0$ (hull) A: 3.100-mm (I \times 3, 1 fwd, 2 aft) -8/37-mm AA (II \times 4) -4/14.5-mm mg $(II \times 2) - 2/RBU-1200 (V \times 2) - 4/BMB-2 d.c. mortars - 2/d.c. racks -$

Electron Equipt: Radar: 1/Fin Curve nav. - Sonar: MF hull-mounted M: 2 diesels; 2 props; 16,000 hp

REMARKS: Chinese version of the Soviet Riga class, with diesel propulsion. One built at Shanghai 1968, the others at Shantou. Lack sensors and radar f.c., but do have optical director for 100-mm guns.

4 Soviet Riga class

| | Bldr | L | In serv. |
|-------------|---------------------|---------|----------|
| 505 Guiyang | Hudong SY, Shanghai | 26-9-56 | 1958 |
| 506 Kunming | Guangzhou SY | 1957 | 1959 |
| 507 CHENGDU | Hudong SY, Shanghai | 28-4-56 | 1958 |
| 509 Guilin | Guangzhou SY | 1957 | 1959 |
| | | | |



Kunming (506)

1980



Chengdu (507)

1982

D: 1,280 tons (1,510 fl) **S:** 28 kts **Dim:** $91.0 \times 10.2 \times 3.2$

A: $2/SSM (II \times 1) - 3/100 - mm DP (I \times 3) - 4/37 - mm AA (II \times 2) - 4/14.5 - mm$ mg (II \times 2) — 4/BMB-2 d.c. mortars — 2/d.c. racks — mines

Electron Equipt: Radar: 1/Type 756 nav. 1/Slim Net, 1/Square Tie, 1/Sun Visor Sonar: MF hull-mounted - EW: None IFF; 2/Square Head, 1/High Pole A

M: 2 sets GT; 2 props; 20,000 hp Boilers: 2: 27 kg/cm², 360°C Fuel: 230 tons Electric: 450 kw Range: 550/28; 2,000/13 Man: 175 tot.

REMARKS: Twin, trainable CSS-N-1 Styx launcher replaced torpedo tube mount during early 1970s. Very limited endurance.

CORVETTES

Note: Some of the following ships, acquired in 1949 following the departure of Kuomintang forces, may have been stricken in recent years.

1 Japanese Ukuru class Bldr: Hitachi, Kanagawa

L In serv.

Hui An (ex-Shisaka) 31-10-44 7-45

D: 940 tons (1,020 fl) **S**: 19.5 kts **Dim**: $78.6 \times 9.1 \times 3.0$

A: 12/37-mm AA (II \times 3, I \times 6) -2/BMB-2 d.c. mortars -2/d.c. racks - mines

M: 2 diesels; 2 props; 4,200 hp Range: 5,000/16 Man: 150 tot.

REMARKS: Reengined and rearmed with Soviet guns during 1950s. Again rearmed late 1970s, when twin 37-mm AA replaced three single 100-mm mounts, and ASW ord-

• up to 5 Japanese Kaibokan Type D class

| | Bldr | Laid down | L | In serv. |
|---------------------|----------------------|-----------|----------|----------|
| Wu Jang (ex-CD 14) | Yokosuka NY | 5-10-43 | 25-1-44 | 27-3-44 |
| Jangsha (ex-CD 118) | Ishikawajima, Tokyo | 8-6-44 | 20-11-44 | 27-12-44 |
| Dungan (ex-CD 192) | Mitsubishi, Nagasaki | 5-12-44 | 30-1-45 | 28-2-45 |
| Jian (ex-CD 194) | Mitsubishi, Nagasaki | 18-12-44 | 15-2-45 | 15-3-45 |
| Shian (ex-CD 198) | Mitsubishi, Nagasaki | 17-1-45 | 26-2-45 | 31-3-45 |



Japanese Kaibokan Type D in Chinese service

D: 740 tons (940 fl) **S:** 17 kts **Dim:** $69.5 \times 8.6 \times 3.0$

A: 2/100-mm DP $(I \times 2)$ — 6/37-mm AA $(II \times 2, I \times 2)$ — mines

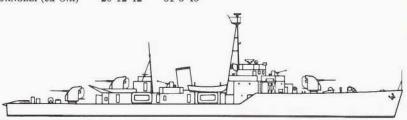
M: 1 set GT; 1 prop; 2,500 hp

Boilers: 2 Kampon Range: 4,500/14 Man: 150 tot.

Remarks: Some have probably been discarded. Very lightly built. Rearmed in 1950s: some had 2 U.S. 76.2-mm Mk 26 DP. No ASW armament. Only two or three remain.

1 Japanese Etorufu class Bldr: Uraga DY, Tokyo

In serv. JANGBEI (ex-Oki) 20-12-42 31 - 3 - 43



Japanese Etorufu class in Chinese service

D: 860 tons (1, 020 fl) S: 19 kts Dim: 77.7 × 8.8 × 3.0

A: 3/100-mm DP (I × 3) - 3/37-mm AA - mines

M: 2 diesels; 2 props; 4,200 hp Range: 8,000/16 Man: 150 tot.

Remarks: Rearmed with Soviet weapons during late 1950s. No ASW capability.

♦ 1 Australian Bathurst-class former minesweeper

Eng., Sydney

Laid down T. In serv. LOYANG (ex-merc. Cheung Hing, ex-Aust. Bendigo) 12-8-40 1-3-41 10-5-41

Bldr: Cockatoo DY &



Australian Bathurst class in Chinese service

D: 733 tons **S**: 15 kts **Dim**: $56.59 \times 9.47 \times 3.20$ A: 2/100-mm DP (I \times 2) -5/37-mm AA (I \times 5) -2/14.5-mm mg (I \times 2) M: 2 sets triple-expansion reciprocating steam; 2 props; 1,800 hp Boilers: 2/Yarrow 3-drum Fuel: 153 tons Range: 1,730/14; 2,640/10 Man: 100 tot.

♦ 1 Japanese Hashidate-class former river gunboat

Bldr In serv. Nanjang (ex-Uji) Sakurajima, Osaka 29-9-40 30-4-41

CORVETTES (continued)



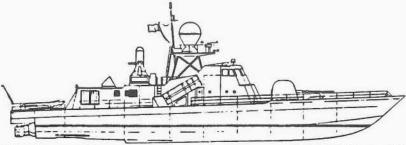
Japanese Hashidate class

D: 999 tons light (1,200 fl) **S**: 19 kts **Dim**: $79.2 \times 9.7 \times 2.4$ A: 2/130-mm (I \times 2) -5/37-mm AA (II \times 2, I \times 1) — mines M: 2 sets GT; 2 props; 4,600 hp Boilers: 2 Kampon Range: 3,400/14 Man: 170 tot.

REMARKS: Sunk twice during World War II. Rearmed with Soviet guns during mid-1950s; 130-mm guns same as on Gordyy-class destroyers.

GUIDED-MISSILE PATROL BOATS

 ♦ 0 (+16) H-3 project Bldr: . . .



H-3 notional configuration

H-3 R & D Group, 1985

D: 239 tons (fl) **S:** 50 + kts **Dim:** $47.0 \times 7.5 \times 1.9$

A: 4/SSM-1/76-mm OTO Melara DP-1/20-mm Mk 15 CIWS

Electron Equipt: Radar: 1/nav., 1/H.S.A. WM-25 series

M: 3 G.M. Allison 570kF gas turbines; 3 KaMeWa waterjets; 19,182 hp

REMARKS: Aluminum construction project, designed by Edward Heinemann, of Douglas Aircraft fame, with Nickum & Spaulding Associates. Armament and electronics listed are provisional; a newly noted Chinese SSM of MM 40 Exocet dimensions may be intended. Prototype may be built in U.S., with up to 15 production versions to be built in China.

◆ 1 Hola class (In serv. 1970)

D: 300 tons S: . . . kts Dim: 43.0 × . . . × . . . A: 2/HY-2 SSM $(I \times 2) - 2/37$ -mm AA $(II \times 2)$

REMARKS: An enlarged version of Osa-I, and at one time equipped with a large radome. Apparently unsuccessful. Two additional SSM also removed by 1980s.

♦ 120 Huangfeng (Soviet Osa-I) class

Bldr: Jiangnan SY, Shanghai, 1960-



No. 3115, with radome aft and 30-mm AA

R. Gillett, 9-84

D: 175 tons, 186.5 normal (205 fl) **S:** 35 kts **Dim:** 38.75 × 7.60 × 1.7 (mean) A: 4/HY-2 Styx SSM — 4/25-mm or 30-mm AA (II × 2)

Electron Equipt: Radar: 1/Square Tie — IFF: 2/Square Head, 1/High Pole A

M: 3 M503A diesels; 3 props; 12,000 hp

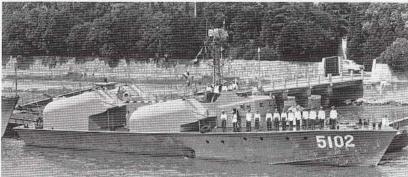
Electric: 65 kw Range: 800/30 Man: 28 tot.

Remarks: At least four were transferred by the U.S.S.R. circa 1960 and have 4/30-mm AA (II × 2) but no Drum Tilt gun fire-control radar. Most Chinese-built units had two twin 25-mm AA until early 1980s, when increasing numbers with a Chinese-built version of the Soviet AK-230, 30-mm AA began to appear; more recently, several have had a radome installed aft for a probable f.c. radar for the 30-mm AA. The 1980s have also seen the introduction of IFF equipment. Considerable numbers of the craft have been seen in an incomplete state in the Shanghai area in recent years, and not all of the listed total are operational.



No. 3113, with 25-mm AA, no IFF or gun f.c. radar

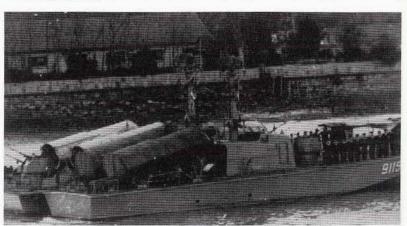
Chinese Navy, 1979



No. 5102, with 30-mm AA, but no radome aft

R. Gillett, 9-84

♦ 70-75 Hoku class



Hoku-class, guided-missile patrol boat - with Homa hydrofoil variant inboard

D: 68 tons (74 normal/79.19 fl) S: 38 kts Dim: 27.0 × 6.30 × 1.8 (1.295 mean hull)

A: 2/HY-2 Styx SSM — 2/25-mm AA (II × 1)

Electron Equipt: Radar: 1/Square Tie M: 4 M50 diesels; 4 props; 4,800 hp Electric: 65 kw Endurance: 5 days Range: 520/26 Man: 17 tot.

Remarks: Steel-hulled improvement on Komar. Also referred to as "Hegu" class. A slightly longer variant, with hydrofoils and a second 25-mm AA mount aft, is nicknamed "Homa" and apparently appeared in only a single, unsuccessful, prototype form.

TORPEDO BOATS

♦ 120 Huchuan-class hydrofoils 1966-1980)

Bldr: Hudong SY, Shanghai (In serv.

D: 39 tons (45.8 fl) **S:** 50 kts **Dim:** 22.50×3.80 (6.26 over foils) $\times 1.146$ A: 2/533-mm TT -4/14.5-mm mg(II \times 2)

Electron Equipt: Radar: 1/Type 756

M: 3 M50 diesels; 3 props; 3,600 hp Electric: 5.6 kw Range: 500/30 Man: 11 tot.

Remarks: Identical to the hydrofoils delivered to Albania, Pakistan, and Tanzania. Also built in Romania. Not all units have the foils fitted; no foils aft, as stern planes on surface. In most, both gunmounts are aft, but in a few, one mount is forward. Some have Skin Head radar, while later ships have a Type 756 slotted-waveguide radar

TORPEDO BOATS (continued)



Chinese Huchuan class—unit in foreground (3214) has no hydrofoils; craft in background to left does

♦ 60 Soviet P 6-class wooden-hulled Bldr: China, 1960s

D: 56 tons (66.5 fl) S: 43 kts Dim: 25.3 × 6.1 × 1.7

A: 2/533-mm TT — 4.25-mm AA (II × 2) Electron Equipt: Radar: 1/Skin Head

M: 4 M50 diesels; 4 props; 4,800 hp Man: 20 tot.

Remarks: Beginning to be retired.

♦ 50 Soviet P 4-class aluminum-hulled hydroplanes (1950s)

D: 19.3 tons (22.4 fl) **S:** 55 kts **Dim:** 19.3 × 3.7 × 1.0

A: 2/14.5-mm mg (II × 1) — 2/450-mm TT Man: 12 tot.

Electron Equipt: Radar: 1/Skin Head M: 2 M50 diesels; 2 props; 2,400 hp

Remarks: Majority believed to be in reserve. Four transferred to Bangladesh, 1983.

PATROL BOATS

♦ 40-45 Hainan class (In serv. 1964-. . .)



Hainan-class patrol boat 642

R. Gillett, 9-84

D: 375 tons (400 fl) S: 30.5 kts Dim: 58.77 × 7.20 × 2.20 (hull)

A: 4/57-mm AA (II × 2) — 4/25-mm AA (II × 2) — 4/RBU-1200 (V × 4) — 2/BMB-2 d.c. mortars — 2/d.c. racks — mines

Electron Equipt: Radar: 1/Pot Head - IFF; 1/High Pole A transponder

M: 4 diesels; 4 props; 8,800 hp

Range: 2,000/14 Man: 70 tot.

Remarks: Hull numbers in 600s and 800s. Early units had 2/76.2-mm DP U.S. Mk 26 vice 4/57-mm AA and Skin Head radars. Two were transferred to Pakistan, 1976, and two more in 1980; eight delivered to Egypt 1983-85.

Note: An enlarged version of Hainan, nicknamed the Haiju class has been reported. On an overall length of 64 m, the armament is 2/57-mm AA (II), 4/30-mm AA (II \times 2), 4/RBU-1200 ASW RL (V \times 4). No confirmation available.



Hainan-class patrol boat 687

R. Gillett, 9-84

◆ 20 Soviet Kronshtadt class (In serv. 1956-57)



Chinese Kronshtadt No. 275

197

D: 300 tons (330 fl)
 S: 18 kts
 Dim: 52.1 × 6.5 × 2.2
 A: 1/85-mm DP - 2/37-mm AA - 6/14.5-mm mg (II × 3) - 2/BMB-1 d.c. projectors - 2/d.c. racks. Some: 2/RBU-1200 ASW RL (V × 2)

Electron Equipt: Radar: 1/Ball End M: 3 diesels; 3 props; 3,300 hp

Fuel: 20 tons Range: 3,500/14 Man: 50 tot.

Remarks: Six could have been delivered by the U.S.S.R., the other built in Shanghai and Canton. Other information indicates that only two were built in China, the balance in the Soviet Union. Hull numbers in 600s.

• 325-330 Shanghai-II class (In serv. 1962-. . .)



Shanghai-II - late version

R. Gillett, 9-84



Shanghai-II class - early version with squared-off bridge

1976

D: 122.5 tons (134.8 fl) **S:** 28.5 kts **Dim:** $38.78 \times 5.41 \times 1.49$ (hull; 1.554 full load)

A: 4/37-mm AA (II × 2) — 4/25-mm AA (II × 2) — depth charges — mines. Some: 2/81-mm recoilless rifles (II × 1)

Electron Equipt: Radar: Pot Head or Skin Head

M: 2 M50F-4, 1,200-hp, and 2/12D6, 910-hp diesels; 4 props; 4,220 hp

Endurance: 7 days Electric: 39 kw Range: 750/16.5 Man: 36 tot.

Remarks: Still being constructed. A large number have been transferred to foreign

navies. Very unsophisticated and sparsely equipped. Shanghai-I class was smaller and had 2/57-mm (II \times 1) forward; a few of the 12 built 1959-60 may remain in service: 125 tons (fl); $36.0 \times 5.5 \times 1.4$; propulsion as for Shanghai-II.

PATROL BOATS (continued)

◆ 25 Shantou class (In serv. 1955-60)



Shantou class - with recoilless rifle on bow

D: 80 tons (fl) **S**: 28 kts **Dim**: $25.1 \times 6.0 \times 1.8$

A: 4/37-mm AA (II \times 2) -2/14.5-mm mg (I \times 2) -1/81-mm recoilless rifle

Electron Equipt: Radar: 1/Skin Head

M: 2 Type 3D12, 300-hp diesels; 2 M50, 1,200-hp diesels; 4 props; 3,000 hp

Remarks: Formerly nicknamed the "Swatow" class. Similar to P 6, but broader and with a steel hull.

PATROL CRAFT

♦ . . . 25-meter class Bldr: . . . (In serv. 1980s)

D: 53.5 tons normal (55.77 fl) **S:** 38 kts **Dim:** $25.0 \times 5.0 \times ...$

A: 4/25-mm AA (II × 2) Electron Equipt: Radar: 1/Pot Head

M: 3 M50-series diesels; 3 props; 3,600 hp Electric: 12 kw Endurance: 5-7 days Range: 300/27; 490/. . . Man: 20 tot.

Remarks: Official data for a class of patrol craft that has yet to receive a Western nickname. Apparently a production successor to the Beihai class.

♦ 30 Beihai-class patrol craft Bldr: . . . (1960s)



Beihai class

1966

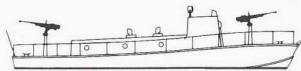
D: 80 tons (fl) **S:** 18 kts **Dim:** $27.5 \times 5.5 \times 1.6$ **A:** 4/25-mm AA (II \times 2) **M:** 3 diesels; 3 props; 900 hp

Remarks: Majority subordinated to Naval Militia of the various "Military Maritime Districts."

♦ 15 Huangpu-class patrol craft Bldr: . . . (In serv. 1970s)

Remarks: Data as for Beihai class, except A: 4/14.5-mm mg (II \times 2). Have low super-structure fore and aft, providing additional accommodations for police or troops.

♦ 40 Yulin-class patrol craft Bldr: . . . (In serv. 1964-68)



Yulin class

Remarks: Craft of this class also transferred to Kampuchea, Congo, and Tanzania.

♦ 1 or more Yingkou-class patrol craft Bldr: . . . (In serv. 1960-65)

D: 40 tons (fl) **S:** 18 kts **Dim:** 20.0 \times . . . \times . . . **A:** 2/12.7-mm mg **M:** 2 diesels; 2 props; 600 hp

Remarks: Subordinated to "Military Maritime District" in South China militia.

several hundred armed fishing trawlers

Remarks: Many Chinese fishing trawlers are armed with 1 or 2/12.7-mm mg and perform dual service as fisheries patrol craft and fishing trawlers. There are several classes of these Militia-subordinated, steel-hulled, single-screwed craft displacing 200-450 tons (fl).



Yingkou class

1967



Chinese armed fishing trawler T 710

1973



Customs Patrol 301 at Shanghai

R. Gillett, 9-84

The above craft, armed with 4/14.5-mm mg (II \times 2), is one of a number operated by customs and piloting agencies. This particular unit displaces 245 tons (fl), has a max. speed of 28 knots (27 continuous), an endurance of 2,000 n.m. at 16 kts, and has dimensions of $44.50 \times 7.00 \times 1.85$.

MINE WARFARE SHIPS

◆ 23 Soviet T-43-class fleet minesweepers Bldrs: Wuzhang SY, Guangzhous SY (In serv. 1956-1970s)



Chinese T-43-class minesweeper 853

R. Gillett, 9-84

D: 500 tons (590 fl) **S:** 14 kts **Dim:** 60.0 × 8.6 × 2.16

A: 4/37-mm AA (II \times 2) -4/25-mm AA (II \times 2) -4/12.7-mm mg (II \times 2) -2/d.c. projectors — mines

Electron Equipt: Radar: 1/Ball End—IFF: 1/Square Head, 1/High Pole A M: 2/Type 9D diesels; 2 props; 2,200 hp

Fuel: 70 tons Electric: 550 kw Range: 3,200/10 Man: 65-80 tot.

Remarks: A few shorter-hulled, 58-meter, 570-ton units were transferred from the U.S.S.R.; the majority are long-hulled ships and were built in China. Several were built or converted as surveying ships and civilian research ships. At least one mine-sweeper has an 85-mm DP gun forward. Current hull numbers in the 800s.

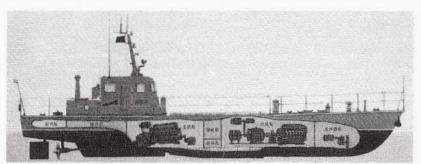
MINE WARFARE SHIPS (continued)

• up to 80 auxiliary minesweepers converted from fishing boats



Auxiliary minesweepers—subordinated to the Shanghai area Military Maritime District. Sometimes referred to as the Lien Yun class, these ships displace about 400 tons, are armed with 12.7-mm machine guns, and are based on a steel-hulled trawler design.

- 20 Fushun-class coastal minesweepers—derived from Shanghai II gunboat design—see patrol boat entry for characteristics.
- . . . Type 312 drone minesweepers (In serv. late 1960s-. . .)



Type 312 drone minesweeper

Chinese Navy, 1984

D: 46.95 tons (fl) **S:** 2 kts **Dim:** $20.94 \times 4.20 \times 1.30$ **M:** 1 Type 3D12 diesel; 1 CP prop; 300 hp

Remarks: Normally operated by radio control to a range of 3 n.m., but can be manned. Electric propulsion for sweeping at 1 to 5 kts. Diesel generator amidships powers integral electromagnet for magnetic sweeping and a noisemaker for actuating acoustic mines. All equipment shock-mounted. Laser precision navigation system. Officially stated not to be good sea boats; large numbers have been built, however.

AMPHIBIOUS WARFARE SHIPS

♦ 3 Yukan-class landing ships Bldr: Zhonghua 1978-80)

Bldr: Zhonghua SY, Shanghai (In serv.

927 934 937



Yukan No. 927 and a sister

R. Gillett, 9-84

D: 3,400 (5,00 fl) S: 17 kts Dim: $120.0 \times 15.0 \times 3.7$ A: 8/57-mm AA (II \times 4) -8/25-mm AA (II \times 4) M: Diesels; 2 props; . . . hp Electron Equipt: Radar: 2/nav.—IFF: 1/High Pole A

Remarks: Evidently built to replace aging World War II-built U.S. LSTs, these ships are larger and considerably faster than their predecessors. Carry two U.S.-design LCVPs. Bow and stern ramps.



Yukan No. 927 and a sister - note lowered stern ramp

R. Gillett, 9-84

♦ 15 ex-U.S. LST 1- and LST 542-class tank landing ships (In serv. 1943-45)



LST 1 class — 76.2-mm gun on bow, old pendant number

1970

D: 1,625 tons (4,080 fl) S: 11 kts Dim: 99.98 × 15.24 × 4.36

A: 2-3/76.2-mm DP (II) -6-8/37-mm AA (II)

M: 2 G.M. 12-278A or 12-567A diesels; 2 props; 1,800 hp

Remarks: Cargo capacity: 2,100 tons. Some are immobile as accommodations ships or tenders for submarines. Most rearmed during late 1950s with U.S. 76.2-mm guns and Soviet twin 37-mm AA.

◆ 4 (+ . . .) Yudao-class medium landing ships (In serv. 1980-. . .)

D: 1,000 tons (fl) S: . . . Dim: $65.0 \times$. . . \times . . . A: 8/25-mm AA (II \times 4) M: Diesels

Remarks: Smaller, but apparently faster than the Yu Ling class. Probably intended as replacements for World War II-era U.S. LSM 1 class. Resemble a smaller version of the LST 1 design.

♦ 15 ex-U.S. LSM 1-class medium landing ships (In serv. 1944-45)



LSM-1-class 936, showing mine port aft

R. Gillett, 9-84

D: 743 tons (1,095 fl) **S:** 12.5 kts **Dim:** $62.03 \times 10.52 \times 2.54$ **A:** 6/37-mm AA (II \times 3) — 4/25-mm AA (II \times 2) — mines

Electron Equipt: Radar: 1/Fin Curve

M: 2 Fairbanks-Morse 38D8%-10 or G.M. 16-278A diesels; 2 props; 2,800 hp Range: 2,500/12

Remarks: Rearmed with Soviet weapons late 1950s. Most have two mine-laying ports in the stern. Several have superstructure built over the open tank deck.

1 or more Yuling-class utility landing craft (In serv. 1971-75)

D: 600 tons (fl) S: 12 kts Dim: 50.0 × 7.0 × 2.0

A: 8/14.5-mm mg (II × 4) Electron Equipt: Radar: 1/Type 756 nav.

M: 2 diesels; 2 props; . . . hp

AMPHIBIOUS WARFARE SHIPS (continued)



Yuling class N 1122 of the Nanjing Maritime Border Defense force 1983

♦ 6-8 U.S. LCT (6)-class utility landing craft (In serv. 1943-45)



U.S. LCT (6)-class landing craft Y 698

R. Gillett, 9-84

D: 143 tons (309 fl) **S:** 10 kts **Dim:** $36.3 \times 9.6 \times 1.2$

A: 4/145-mm mg (I × 4)

M: 3 G.M. 6-71 diesels; 3 props; 675 hp Range: 1,200/7

Remarks: Acquired 1949. Cargo: 150 tons. Sterns since enclosed and pilothouses greatly enlarged. Several LCT (5) of similar design may also survive. Now considered to be "transports" and have "Y"-series pendants.

♦ 300 Yunnan-class landing craft Bldr: Huangzhou SY (In serv. 1968-72)



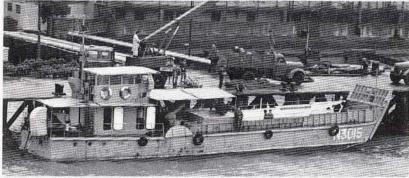
Yunnan class No. 5561

R. Gillett, 9-84

D: 133.2 tons (fl) **S:** 10.5 kts **Dim:** 27.50 (24.07 pp) × 5.40 × 1.40 **A:** 2-4/14.5-mm mg (I or II × 2) **M:** 2 diesels; 2 props; 600 hp **Range:** 500/10 **Man:** 6 tot.

REMARKS: Cargo: 46 tons (1 tank). Cargo deck 15.0 × 4.0 m

◆ 40-50 Yuchin-class landing craft (In serv. 1962-72)



Yuchin class No. N 3015 of the Nanjing Maritime Border Defense Force R. Gillett, 9-84

D: 60 tons light (110 ft) **S:** 9 kts **Dim:** $24.0 \times 5.1 \times 1.2$ **A:** 2/14.5-mm mg ($I \times 2$) **M:** 2 diesels; 2 props; 600 hp

20-30 Yuchai-class landing craft (In serv. 1960s)



Yuchai class Y 761

R. Gillett, 9-84

D: 70 tons (fl) **S:** 10 kts **Dim:** $20.0 \times 4.3 \times 1.0$ **A:** 4/14.5-mm mg (II \times 2) **M:** 2 diesels; 2 props; 600 hp

Remarks: Some, including unit shown above, have "Y"-pendants, indicating service as "transports" rather than as landing craft per se.

• approx. 50 copies U.S. LCM(6)-class landing craft (In serv. 1950s-1960s)

D: 24 tons (56 fl) S: 9 kts Dim: $17.0 \times 4.4 \times 1.2$ A: 2/12.7-mm mg (I \times 2) M: 2 diesels; 2 props; 300 hp

♦ 1 Dagu-A-class air-cushion landing craft prototype



Dagu-A air-cushion vehicle - note bow door

1981

D: 61 tons (fl) S: 55 kts Dim: 27.2 × 13.8 × 9.6 (high)

M: 2 turboprop propulsion engines; 1 gas turbine lift engine, geared also to 2 auxiliary propellers

Remarks: Cargo: 16.8 tons. Designed by Shanghai SB Research and Development Institute. The function of the small airscrews amidships is uncertain; they may aid in maneuvering. There are six centrifugal lift-fans. Appears to be an engineering prototype rather than an operational combatant. Other hovercraft designs reported include the Payi and Jingsah designs, both smaller than the Dagu-A.

AUXILIARY SHIPS

There is no comprehensive information on the Chinese fleet's logistic support, but China has designated and built large numbers of auxiliary vessels, running the spectrum of logistics support, repair, hydrographic survey, and research types, including a great many tugs and small oilers.

ICEBREAKERS

♦ 2 Haiping class Bldr: Jiu Shin SY, Shanghai

Haiping 101 (L: 26-12-69) Haiping 102 (L: 1972)

D: 3,200 tons **S:** 16 kts **Dim:** $84.0 \times 15.0 \times 5.0$

A: 8/37-mm AA (II × 4) -8/25-mm AA (II × 4)

M: 2 diesels; 2 props; 5,200 hp

REMARKS: Differ in details of superstructure. Can also be used as ocean tugs.

HYDROGRAPHIC SURVEY SHIPS

◆ 1 Kanzhu class (In serv. 1973)

K 420



Kanzhu class No. K 420

HYDROGRAPHIC SURVEY SHIPS (continued)

D: 1,000 tons (fl) S: 20 kts Dim: 65.0 × 9.0 × 3.0

A: 4/37-mm AA (II × 2) -4/25-mm AA (II × 2) -4/14.5-mm mg (II × 2)

M: 4 diesels; 2 props; 4,400 hp Man: 120 tot.

REMARKS: Operates in South China waters.

♦ 3 Yanlai class (In serv. early 1970s)

K 629 K 512 K . . .

D: 1,100 tons (fl) **S:** 16 kts **Dim:** $72.0 \times 9.8 \times 3.0$

A: 4/37-mm AA (II \times 2) -4/25-mm AA (II \times 2)

M: 2 diesels; 2 props; 2,200 hp

REMARKS: Funnel amidships; large crane aft.

♦ 2 Modified T-43-class minesweepers (In serv. late 1960s)



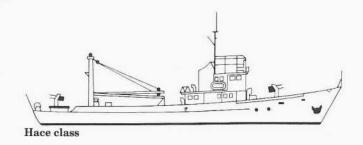
T-43-class research ship S 994

R. Gillett, 9-84

D: 500 tons (590 fl) S: 14 kts Dim: $60.0 \times 8.6 \times 2.16$ A: 2/37-mm AA (II \times 1) -4/14.5-mm AA (II \times 2) Electron Equipt: Radar: 1/Fin Curve Range: 3,200/10 M: 2 Type 9D diesels; 2 props; 2,200 hp Fuel: 70 tons

Remarks: "S" pendant indicates research role, rather than hydrographic survey. Extended after deckhouse, no minesweeping equipment. Four-point mooring capability.

♦ 2 Hace-class coastal survey ships (In serv. 1960s)



D: 400 tons **S:** 12 kts **Dim:** $38.0 \times 7.6 \times 3.4$ **A:** 4/14.5-mm mg (II \times 2) **M:** 1 diesel; 1 prop; 400 hp

REMARKS: Design derived from that of a coastal cargo ship.

♦ 1 British "Flower"-class former corvette

N. (ex-Clover) Fleming & Ferguson, U.K. 30-1-41 31-5-41

D: 1,060 tons (1,340 fl) S: 16 kts Dim: $62.48 \times 10.23 \times 4.80$ A: . . . M: 1 set 4-cyl., triple-expansion reciprocating steam; 1 prop; 1,750 hp Boilers: 2 Admiralty 3-drum Fuel: 230 tons Range: 3,100/15; 5,000/10

Remarks: Used as a corvette until early 1970s; one sister scrapped at that time.

- ♦ 1 Yanlun class (In serv. 1965) no data available
- up to 10 additional naval survey ships

OCEANOGRAPHIC SURVEY SHIPS

♦ 2 Haiyang class (In serv. 1972-73)

HAIYANG 01 HAIYANG 02

D: 3,295 tons **S:** 20 kts **Dim:** $104.0 \times 13.8 \times 5.0$ **A:** 6/37-mm AA (II \times 3) **M:** 2 diesels; 2 props; 9,000 hp

Remarks: Resemble passenger liners; white-painted.

♦ 3 Shukuang class (In serv. late 1960s)

SHUKUANG 01 SHUKUANG 02 SHUKUANG 03

D: 500 tons (590 fl) **S**: 14 kts **Dim**: $60.0 \times 8.4 \times 2.15$

A: 1/37-mm AA M: 2 diesels; 2 props; 2,200 hp

Range: 3,200/10

Remarks: Design closely derived from T-43-class minesweeper. White-painted. There is also Shukuang 04, a more modern-appearing ship about the same size.

♦ 2 Shihjian class Bldr: Hutung SY, Shanghai (In serv. 1968-69)

SHIHJIAN N.....

D: 2,955 tons **S**: 16.2 kts **Dim**: $94.73 (87.00 \text{ pp}) \times 14.04 \times 4.75$

A: 8/14.5-mm mg (II × 4) Electric: 1,065 kw

M: 2 Type 6 ESD(2) 48/82 diesels; 2 props; 4,000 hp Range: 7,500/14.5

Remarks: 2,500 grt/1,000 dwt. Enlarged version of Dong Fang Hong class.

♦ 2 Dong Fang Hong class Bldr: Hutung SY, Shanghai (In serv. 1964-66)

N. Dong Fang Hong



Dong Fang Hong

1978

D: 2,900 tons S: 14 kts Dim: $86.00 \times 11.50 \times 4.75$ A: None M: 2 diesels; 2 props; 4,000 hp

Note: Subordinated to the Shandong Oceanographic College. There are also large numbers of civilian-agency-subordinated research vessels for oil exploration, fisheries research, etc.

EXPERIMENTAL SHIPS

♦ 2 Yuanwang-class satellite and missile tracking ships Bldr: Hutung SY, Shanghai (In serv. 1980)

YUANWANG 1 YUANWANG 2



Yuanwang 2

R.N.Z.N., 1980

D: 17,100 tons (21,000 fl) **S:** 20 kts **Dim:** $190.0 \times 22.6 \times 7.5$ **M:** 1 diesels; 1 prop; . . . hp

Remarks: First observed during the 5-80 Chinese ICBM tests in the Central Pacific. Have one large parabolic tracking antenna, two log-periodic HF ("fish-spine") antennas, several precision theodolite optical tracking stations, and two smaller missile-tracking radars, as well as positions for later installation of equipment. Large helicopter deck, but no hangar. Have a bow-thruster and retractable fin stabilizers.

Note: The Xiang Yang Hong ("East is Red"—the title of the Chinese national anthem)—series ships are mainly disparate in size and characteristics; all are capable of a variety of experimental duties (including general oceanography), particularly in support of missile and satellite research and hydrometerology. All are under the general subordination of the Academy of Sciences.

1 new-construction research ship (In serv. 1982)

XIANG YANG HONG 16

D: 4,000 tons (fl) S: . . . Dim: . . . × . . . × . . .

Remarks: Operated for the East China Branch of the National Bureau of Oceanography, for biological and mineral bottom sampling. Possibly a sister to Xiang Yang Hong 9.

EXPERIMENTAL SHIPS (continued)

♦ 1 Xiang Yang Hong 10 class

Bldr: Hutung SY, Shanghai (In serv. 1980)

XIANG YANG HONG 10



Xiang Yang Hong 10 — Super Frélon helicopter on deck aft

R.N.Z.N., 1980

D: 10,975 tons **S**: 20 kts **Dim**: $156.2 \times 20.6 \times 6.8$

M: 2 diesels; 2 props; . . . hp

Remarks: Operated by the East China Sea Branch, State Oceanographic Bureau. Uses same hull and propulsion as the Dajiang-class submarine tenders, but has twin, side-by-side funnels and hangar space for only one French Super Frélon helicopter; the crane forward is smaller, and the kingposts abaft the stacks and the heavy foremast support large log-periodic HF antennas. Has retractable fin stabilizers. Departed for 150-day Antarctic expedition 20-11-84.

♦ 1 Xiang Yang Hong 9 class

Bldr: Hutung SY, Shanghai (In serv. 1979)

XIANG YANG HONG 9



Xiang Yang Hong 9

U.S. Navy, 1982

D: 4,400 tons **S:** . . . kts **Dim:** 110.0 × . . . × . . . **M:** Diesels; 4,000 hp **Range:** 11,000/. . . **Man:** 145 tot.

♦ 1 Polish Francesco Nullo-class (Type B-41) — former cargo ship Bldr: Paris Commune SY, Gdynia, Poland (In serv. 1967)

XIANG YANG HONG 5 (ex-Chang Niy)



Xiang Yang Hong 5

R.N.Z.N., 1980

D: 14,500 tons (fl)
 S: 16 kts
 Dim: 152.6 (141.6 pp) × 19.5 × 8.75
 M: 1 Ciegielski-Sulzer 6RD68 diesel; 1 prop; 7,200 hp
 Range: 15,000/16

REMARKS: Extensively rebuilt as a hydrometeorological-research and radiosonde-balloon tracking ship at Canton in 1970-72, and altered again after 1976, with a two-level superstructure replacing the after two hatches. Has one large log-periodic HF antenna forward. One of her four Chinese-operated merchant sisters briefly served as an unaltered support ship as Xiang Yang Hong 10 in the late 1970s (not the same ship as the new unit above).

♦ 1 Xiang Yang Hong 2 class (In serv. 1971)

XIANG YANG HONG 2

D: 1,000 tons (fl) S: . . . kts Dim: 72.5 × 8.7 × . . .

M: 2 diesels; 2 props; . . . hp

♦ 3 Xiang Yang Hong 1 class (In serv. 1972-74)

XIANG YANG HONG 1 XIANG YANG HONG 4 XIANG YANG HONG 6



Xiang Yang Hong 6

U.S. Navy, 1979

D: Approx. 1,000 tons (fl) S: . . . kts Dim: 67.0 × 10.0 × . . .

M: 2 diesels; 2 props; . . . hp

Remarks: Carried 2/37-mm AA (II \times 1), 8/14.5-mm mg (II \times 4) as completed.

SUBMARINE SUPPORT SHIPS

Note: A new submarine tender was officially reported completed 1985; no data available.

♦ 3 Dajiang class Bldr: Hudong SY, Shanghai (In serv. 1978-80)

J 302 R 327 (ex-J 506) J 121



J 302 - note rescue submersible on deck beside crane

R. Gillett, 9-84



R 327 - note 2 Super Frélon helicopters (old number)

R.N.Z.N., 1980

D: 10,975 tons (fl) S: 20 kts Dim: 156.2 × 20.6 × 6.8 A: None A: None Electron Equipt: Radar: 2/Fin Curve, 1/Eye Shield (MX-902)

M: 2 diesels; 2 props; . . . hp

Remarks: Carry two French Super Frélon heavy helicopters in a double hangar. J 301 differs in not having the deep recesses at the stern (evidently intended to permit a 4-point moor). The huge crane forward tends two trainable cradles just forward of the bridge; the cradles are semicircular in section and support salvage-and-rescue submersibles. The ships share the hull and propulsion of the research ship Xiang Yang Hong 10 and probably also have fin stabilizers. Former J 506 transferred to Academy of Sciences, 1983, and renumbered R 327; large log-periodic antenna added.

♦ 1 Dalang class Bldr: Guangzhou SY (In serv. 1975)

J 503

D: 4,000 tons (fl) S: 16 kts Dim: 130.0 × 14.0 × 4.0

A: 8/37-mm AA (II × 4) -4/14.5-mm mg (II × 2)

M: 2 diesels; 2 props; 4,000 hp

Remarks: Primarily intended for general salvage and towing duties in support of submarines.

SUBMARINE SUPPORT SHIPS (continued)



No. J 503 - Dalang class

1980

♦ 1 Dazhi class

Bldr: Hudong SY, Shanghai (In serv. mid-1960s)



Dazhi class

D: 5,800 tons (fl) **S:** 14 kts **Dim:** $106.7 \times 15.3 \times 6.1$

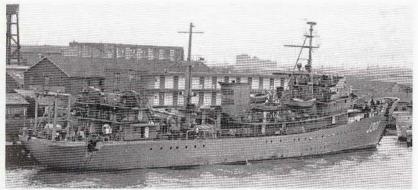
A: 4/37-mm AA (II × 2) -8/25-mm AA (II × 4)

M: 1 diesel; 1 prop; . . . hp

♦ 1 Hudong class Bldr: Hu

Bldr: Hudong SY, Shanghai (In serv. 1969)

J 301



Hudong-class submarine tender J 301

R. Gillett, 9-84

D: 5,000 tons (fl) **S:** . . . kts **Dim:** $95.0 \times 17.0 \times 4.5$ **A:** 4/37-mm AA (II \times 2) -4/14.5-mm mg (II \times 2) **M:** 1 diesel; 1 prop; . . . hp **Electron Equipt:** Radar: 1/Fin Curve

Remarks: Has large gantry over stern for lowering a submarine rescue chamber.

Note: There are several other small submarine support classes, including the 1,100-ton Dazhou class (J 502, J 504) and the 2,800-ton, 82-meter Dadong class (J 304, . . .).

REPAIR SHIPS

♦ 1 Romanian Galati class Bldr: Galati SY (In serv. early 1970s)

D: 5,200 tons (fl) S: 12.5 kts Dim: 100.60 (93.70 pp) × 13.92 × 6.60 A: . . . M: 1 Sulzer 5TAD56 diesel; 1 prop; . . . hp Electric: 345 kw Fuel: 250 tons Range: 5,000/12.5

Remarks: Converted from a cargo ship, with minimal external alterations. Of nine sisters purchased by China, two others serve the navy as cargo ships.

• 1 U.S. Achelous class

Bldr: Kaiser Co., Vancouver, Wash.

Laid down L In serv. 3-8-42 17-10-42 30-1-43

Takushan (ex-Hsing An, ex-Achilles, ARL 41, ex-LST 455)



Takushan (U 891)

R. Gillett, 9-84

D: 4,100 tons (fl) S: 11 kts Dim: 99.98 × 15.24 × 3.40 A: 12/37-mm AA (II × 6) M: 2 G.M. 12-567A diesels; 2 props; 1,800 hp Electric: 350 kw Range: 9,000/9 Man: 290 tot.

Remarks: Acquired 1949. Has 60-ton A-frame gantry, plus several cranes. Generally immobile at Shanghai. Bow doors still functional.

CABLE SHIPS/BUOY TENDERS

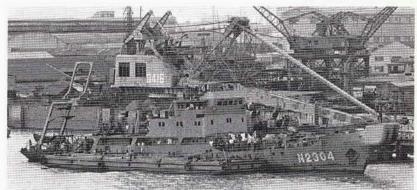
♦ 4 or more . . . class Bldr: Chunghua SY, Shanghai (In serv. late 1970s)
B 873 H 263 N 2304 . . .



Cable layer B 873 with Yuchai LCM alongside—note fixed gantry aft R. Gillett, 9-84



Buoy tender H 263 — note lack of bow sheaves, buoy crane, and handling deck, with reinforced hull sides R. Gillett, 9-84



Cable layer N 2304 - note quadrantial gantry aft

R. Gillett, 9-84

D: 1,550 tons (fl) S: 14 kts (sust.)

Dim: 71.40 (63.00 pp) \times 10.50 \times 3.60

A: 4/37-mm AA (II \times 2) -4/14.5-mm mg or 8/14.5-mm mg (II \times 2) or none M: 2 Type 8300Z diesels; 2 props; 2,200 hp **Electron Equipt:** Radar: 1/Fin Curve

Remarks: Design built for both military and civil use. Cable tank has 187-m³ capacity; ship can lay cable up to 100-mm thick. Those with "B" pendants serve as cable layers; those with "H" pendants are used as mooring buoy tenders. Several ("N" pendants) also serve the Nanjing Maritime Border Defense Force.

REPLENISHMENT OILERS

♦ 3 Fuqing class Bldr: Dalien SY (In serv. 1980-82)

X 575 X 615 X 950

D: 21,740 tons (fl) **S:** 18.6 kts **Dim:** 160.8 × 21.8 × 9.4 **A:** None

Electron Equipt: Radar: 2/Fin Curve — IFF: 1/High Pole A

Electric: 2,480 kw M: 1/Burmeister & Wain diesel; 1 prop; 13,000 hp

Range: 15,000/14 Man: 26 officers, 120 men

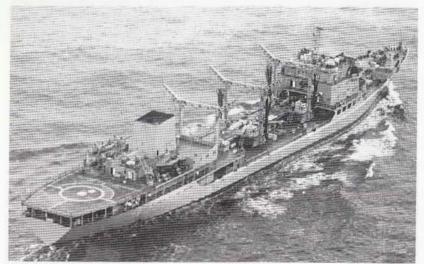
Remarks: Equipment similar to U.S. Navy transfer systems. Two liquid replenishment stations per side, with constant-tension solid transfer stations each side just forward

REPLENISHMENT OILERS (continued)



X 615 (composite photo)—note gun positions abreast streamlined stack and on forecastle

U.S. Navy, 1980



X 950 - rectangular stack, no armament positions

U.S. Navy, 5-83

of the stack. Helo deck, but no hangar. Provision for four twin 37-mm AA gunmounts. X 615 has a rounded stack and a higher aft superstructure than X 950. Both have 4 small electric cranes for stores handling. Carry 11,000 tons fuel oil, 1,000 tons diesel fuel, 200 tons feedwater, 200 tons potable water.

TRANSPORT OILERS

♦ 2 or more new construction (In serv. 1981-. . .)

X 620 X 621

D: 4,940 tons (fl) **S:** 14 kts **Dim:** 101.0 (92.0 pp) \times 13.8 \times 5.5

M: 1 diesel; 1 prop; 2,600 hp Range: 2,400/14

Remarks: 3,318.5 dwt. Cargo: 3,002 tons fuel oil (4,240 m³). Most are for commercial service, but two also employed by the navy.

♦ 6 or more Fulin class Bldr: Hudong SY, Shanghai (In serv. 1972)

D: 2,200 tons (fl) **S:** 10 kts **Dim:** $66.0 \times 10.0 \times 4.0$

A: 4/25-mm AA (II × 2) Electron Equipt: Radar: 1/Fin Curve

M: 1 diesel; 1 prop; 600 hp Range: 1,500/8 Man: 30 tot.

Remarks: Part of a series of 20, most of which went into merchant service. Several reported to have a single underway replenishment rig. At least one (N 1104) is subordinated to the Nanjing Maritime Border Defense Force. Resemble an enlarged Fuzhou.

♦ 14 or more Fuzhou class Bldr: Hudong SY, Shanghai (In serv. 1964-70)



Fuzhou class N 1101 of the Nanjing Maritime Border Defense Force R. Gillett, 9-8

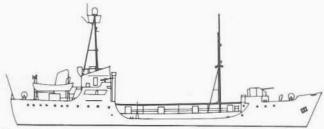
D: 1,200 tons (fl) **S:** 10-12 kts **Dim:** $60.0 (55.0 \text{ pp}) \times 9.0 \times 3.5$

A: 4.25-mm AA (II \times 2) -4/14.5-mm mg (II \times 2) Electron Equipt: Radar: 1/Fin Curve or Type 756

M: 1 diesel; 1 prop; 600 hp Man: 30 tot.

Remarks: Cargo: 600 tons, Five also built in a water-tanker version. Many of the oilers are subordinated to Maritime Border Defense Force. Some are not armed.

5 Leizhou class (In serv. early 1960s)



Leizhou transport oiler

D: 900 tons **S:** 10-12 kts **Dim:** 53.0 (48.0 pp) \times 9.8 \times 3.0 **A:** 4/37-mm AA (II \times 2) — 2/12.7-mm mg (I \times 2) **M:** 1 diesel; 1 prop; 600 hp **Man:** 30 tot.

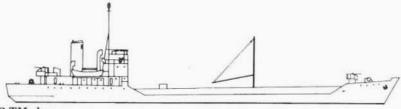
Remarks: Four also built in a water-tanker version, and another was built as a cargo ship (Y 737) with a single kingpost and two cargo holds amidships.

• 2 U.S. Mettawee-class former gasoline tankers (In serv. 1943-44)

D: 700 tons (2,200 fl) S: 14 kts Dim: 67.21 (64.77 pp) \times 11.28 \times 3.99 A: 1/37-mm AA — 4/14.5-mm mg (II \times 2)

M: 1 Fairbanks-Morse 37E16 diesel, 1 prop; 800 hp Fuel: 29 tons Electric: 155 kw

♦ 1 Japanese 2 TM class Bldr: Mitsubishi, Nagasaki (In serv. 1944)



2 TM class

D: 2,935 tons (4,750 fl) **S**: 11.5 kts **Dim**: 98.8 (93.0 pp) \times 13.8 \times 6.0

A: 4/37-mm AA (II × 2) -4/14.5-mm mg (II × 2)

M: 1 set GT; 1 prop; 1,100 hp Boilers: 2 watertube Range: 5,000/11

Remarks: No compound curves to hull. Acquired 1949.

WATER TANKERS

• 5 Fuzhou class Bldr: Hudong SY, Shanghai (In serv. 1964-70)



Fuzhou-class water or gasoline tanker X 629-no armament

R. Gillett, 9-84

Remarks: Data generally as for transport oiler version. Armament distributed differently and lack raised cargo expansion tank top amidships. Formerly armed with 4/25-mm AA (II \times 2) -4/14.5-mm mg (II \times 2).

4 Leizhou class (In serv. early 1960s)

Remarks: Appearance similar to transport oiler version, but lack raised tank top in well-deck area.

• . . . harbor oilers (In serv. . . .)

Two small liquid cargo transports subordinated to the Nanjing District of the Maritime Border Defense Force. Capacity is about 50-70 tons. The total number of craft of this design and the Western nickname are unavailable.

WATER TANKERS (continued)



Harbor Tanker N 1143 and a sister

R. Gillett, 9-84

TRANSPORTS

♦ 4 Qiongsha Class Bldr: Guangzhou SY (In serv. 1980-. . .)
Y 832 Y. . . Y. . . Y. . .



Qiongsha-class transport Y 832

U.S. Navy, 5-83

D: 2,150 tons (fl) S: 16.2 kts Dim: 86.0 (76.0 pp) \times 13.4 \times 3.9 A: 8/14.5-mm mg (II \times 4) Electron Equipt: Radar: 2/Fin Curve M: 3 8NVD48A-2U diesels; 3 props; 3,960 hp Fuel: 195 tons Electric: 575 kw Man: 59 tot.

Remarks: Built for South Seas Fleet service. Carry about 400 troops. Cargo holds fore and aft, each tended by two 1-ton derricks, can hold 350 tons.

CARGO SHIPS

♦ 1 or more . . . class (In serv. 1980)



Cargo ship L 201

1980

Remarks: A cargo ship of about 1,000 dwt, armed with 2/37-mm AA (II \times 1) and 4/14.5-mm mg (II \times 2) and equipped with a Fin Curve navigational radar. Three holds, served by two electrohydraulic cranes. Class name not available.

• 3 or more Hongoi 081 class

Bldr: . . . (In serv. 1970s)

Y 443 Y 755 Y 756

D: 1,950 tons (fl) **S:** 10-12 kts **Dim:** 62.0 (58.0 wl) \times 12.0 \times 4.5 **A:** 4/25-mm AA **M:** 1 diesel; . . . hp

Remarks: 875 grt/1,100 dwt. Sisters in commercial service.

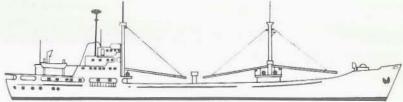
2 Romanian Galati class (In serv. early 1970s)

Remarks: Characteristics as for the repair-ship version described earlier.

• 1 Zhandou 59 class (In serv. 1959-65)

D: 4,735 tons (fl) S: 12.5 kts Dim: 99.4 × 13.0 × 5.5 A: None M: 1 diesel; 1 prop; . . . hp Man: 50 tot.

Remarks: 2,798 grt/3,200 dwt. One of a class of 20 built for merchant marine service; two were combined to produce an oil-drilling platform in the mid-1970s.



Zhandou 59 class

♦ 3 Danlin class (In serv. mid-1960s)

L 202 L 591 L 790



Danlin class L 202

R. Gillett, 9-84

D: 1,150 tons (fl) **S:** 10-12 kts **Dim:** $60.0 \times 9.1 \times 3.5$

A: 2/37-mm AA (I × 2)

M: 1 diesel; 1 prop; 600 hp Cargo: About 600 tons

1 or more U.S. Army FS-331 class (In serv. 1943-44)



FS-331-class cargo ship in Chinese service (old number)

1970

D: 465 tons (935 fl) S: 13.5 kts Dim: 53.49 (49.99 pp) × 9.75 × 3.05

A: Varies. Typical: 4/25-mm AA (II × 2)

M: 2 G.M. 6-278A diesels; 2 props; 1,000 hp Fuel: 57 tons

Range: 3,000/12.5; 4,300/9.5 Man: 30 tot.

REMARKS: Survivor(s) of a group of six or more acquired 1949. Cargo: 595 m3.



Small cargo transport N 1127

R. Gillett. 9-84

Remarks: One of a number of units of this design (including N 1121 and N 3215), most of which seem to be subordinated to the Maritime Border Defense Force districts of about 450 tons (fl) displacement, they have a single cargo hold amidships, are equipped with a Type 756 navigational radar, and are armed with two twin side-by-side 14.5-mm mg mounts. Maximum speed is about 9 kts on a single 300-hp diesel.

SEAGOING TUGS

♦ 1 or more new-construction naval seagoing salvage tugs SY (In serv. . . .)

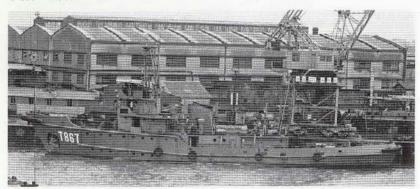
D: 5,279 tons (fl) S: 19 kts Dim: 102.2 (92.0 pp) × 16.0 × 6.5
 M: 2 Burmeister & Wain/Dalien 8S50LU diesels; 2 CP props; 13,600 hp
 Man: 50 tot.

SEAGOING TUGS (continued)

Remarks: Construction announced 1980; may be intended for civil subordination. 106ton bollard pull. Equipped with 450-hp bow-thruster, firefighting cannon, pumps, divers' support gear, etc.

♦ 3 or more Hujia-class seagoing Bldr: . . . (In serv. 1980s)

T 155 T 867 T. . .



Hujia-class tug T 867

R. Gillett, 9-84

D: 750 tons (fl) S: 13.5 kts Dim: 49.0 (44.5 pp) × 9.5 × 3.7 A: . . . M: 2 LVP 24 diesels; 2 CP props; 1,800 hp Fuel: 135 tons Electric: 336 kVA Range: 2,200/13.5; 1,100/9 (towing)

♦ 2 Tuzhong class salvage tugs Bldr: Zhonghua SY, Shanghai (In serv. late 1970s)

T 164 T 710



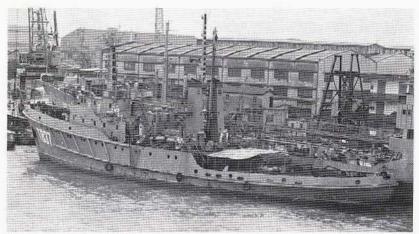
Tuzhong-class salvage tug T 710

1980

D: 3,600 tons (fl) S: 18.5 kts Dim: 84.90 (77.00 pp) × 14.00 × 5.50 A: None M: 2/9 ESDZ 43/82B diesels; 2 CP props; 9,000 hp Range: 18,000/. . . Electron Equipt: Radar: 1/Fin Curve, 1/Square Tie

Remarks: Powerful salvage tug equipped for firefighting, emergency repairs, and with high-capacity pumps. Has 35-ton-capacity towing winch. T 710 has Square Tie missile fire-control radar on foremast, possibly for weapons trials purposes. There is provision for mounting at least two twin 37-mm AA.

♦ 3 Dinghai class Bldr: Wuhu SY (In serv. late 1970s)



Dinghai-class tug T 837

R. Gillett, 9-84

D: 1,472 tons (fl) S: . . . kts Dim: 60.22 × 11.60 × 4.44 A: . . . M: 2 diesels; 2 props; 2,460 hp Range: 7,200/. . .

Remarks: Also built for civil use. 980.28 grt. 25-ton-capacity towing winch. Equipped for firefighting. One transferred to Bangladesh Navy, 1984.

- ♦ 3 Yanting class—D: 450 tons—trawler-type hull
- ♦ 3 FT 14-class converted trawlers—D: 400 tons (fl)
- ♦ 16 Soviet Gromovoy class

Bldr: China (early 1960s)



Gromovoy-class tug T 802, outboard two T-43-class minesweepers

R. Gillett, 9-84

D: 900 tons (fl) S: 11 kts Dim: 45.7 (41.5 pp) \times 9.45 \times 4.6 A: 2/12.7-mm mg (I \times 2) M: 2 diesels; 2 props; 1,200 hp

Remarks: Soviet commercial tug design, built under license.

♦ 4 Soviet Roslavl class Bldr: See remarks (In serv. 1958-64)

D: 750 tons (fl) S: 11 kts Dim: 44.5 × 9.5 × 3.5 M: 2 diesels, electric drive; 2 props; 1,200 hp

REMARKS: One transferred from the U.S.S.R.; the other built circa 1964-65 in China.

♦ 2 U.S. Sotoyomo class (In serv. 1943-45)

D: 435 tons (835 fl) S: 13 kts Dim: 43.59 (40.74 wl) × 10.31 × 4.01 A: . . . M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp Fuel: 158 tons Electric: 120 kw Man: 50 tot.

REMARKS: Acquired 1949. Former U.S. names unknown.

♦ 2 U.S. Army "254-design" class (In serv. early 1940s)



U.S. Army 254-design tug T 800

R. Gillett, 9-84

D: 600 tons (967 fl)
S: 12 kts
Dim: 45.4 (42.7 pp) × 10.1 × 5.33
M: 1 set Skinner Uniflow 53CYRS triple-expansion reciprocating steam; 1 prop; 1,200 hp

Boilers: 2/14 kg/cm² **Fuel:** 325 tons **Range:** 4,200/8

Remarks: Acquired 1949. Former U.S. LT numbers unkown. Wooden hulls.

YARD AND SERVICE CRAFT

There are a reported 380 units in this category, but the true total number is probably far larger and would include yard oilers, tugs, barges, floating dry docks, dredges, and the like. No details are available.



Two Chinese Navy harbor tugs

R. Gillett, 9-84

COLOMBIA

Republic of Colombia

PERSONNEL: (1984): 9,700 total, including 2,500 marines

MERCHANT MARINE (1984): 82 ships-373,828 grt (tankers: 6 ships-30,744 grt)

SUBMARINES

♦ 2 German Type 209 Mod. 1 class

| | Bldr | L | In serv. |
|---------------|---------------------|---------|----------|
| SS 28 Pijao | Howaldtswerke, Kiel | 10-4-74 | 17-4-75 |
| SS 29 TAYRONA | Howaldtswerke, Kiel | 16-7-74 | 18-7-75 |



Tayrona (S 29)

G. Gyssels, 10-81

D: 990 tons std./1,180 surf./1,290 sub. S: 11/22 kts

Dim: 56.10 × 6.20 × 5.50 (surf.) A: 8/533-mm TT fwd (6 reloads) Electron Equipt: Radar: 1/Calypso II

Sonar: Krupp-Atlas active/passive.

M: 4 MTU 12V493 TY60 diesels, 600 hp each; 4 A.E.G. 405-kw generators; 1

Siemens motor, 5,000 hp

Fuel: 100 tons Endurance: 30 days Range: 8,000/8 (snorkel)

Man: 5 officers, 26 men

REMARKS: Have H.S.A. Mk 8 torpedo f.c.s.

♦ 2 Italian S.X. 506 midgets Bldr: Cosmos, Livorno, Italy (1972-74)

SS 20 Intrepido SS 21 Indomable

D: 58/70 tons S: 8.5 kts Dim: 23.0 × 2.0 × 4.0

Cargo capacity: 2,050 kg of explosives; 8 frogmen fully equipped; 2 submarine vehicles (for the frogmen) supported by a fixed system on lower part of the hull, one on each side.

Range: 1,200/7 Man: 5 tot.

Remarks: Similar submarines have been bought by the Pakistani and Taiwanese navies. Sisters Roncador (SS 23) and Quita Sueno (SS 24) are no longer in service.

FRIGATES

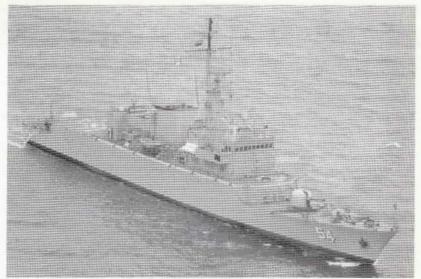
| • 4 FS 1500 class | Bldr: Howaldtswerke, Kiel, W. Germany | | | | |
|----------------------|---------------------------------------|---------|----------|--|--|
| | Laid down | L | In serv. | | |
| 51 Almirante Padilla | 3-81 | 8-1-82 | 31-10-83 | | |
| 52 Caldas | 1981 | 14-6-82 | 14-2-84 | | |
| 53 Antioquia | 22-6-81 | 28-8-82 | 30-4-84 | | |
| 54 Independiente | 22-6-81 | 21-1-83 | 27-7-84 | | |

D: 1,600 tons (1,850 fl) S: 27 kts Dim: 95.3 (90.0 pp) \times 11.3 \times 3.5 (hull) A: 8/MM-40 Exocet SSM-1/76-mm OTO Melara DP-2/40-mm Breda AA (II \times 1) -4/30-mm Emerlec AA (II \times 2) -6/324-mm Mk 32 ASW TT (III \times 2) -1/BO-105 helicopter

Electron Equipt: Radar: 1/navigational, 1/Sea Tiger air search, 1/Castor IIB f.c. Sonar: Krupp Atlas ASO4-2—EW: Scimitar jammer; Phoenix-II, SUSIE passive; 2/Dagaie chaff RL

M: 4 MTU 20V1163 TB82 diesels; 2 CP props; 23,000 hp (21,000 sust.) Fuel: 200 tons Range: 5,000/14 Electric: 2,120 kw Man: 92 tot.

Remarks: Ordered 1980, with the first originally scheduled for delivery 20-7-82. Fin stabilizers, helicopter hangar. Engines are a new model not previously installed in a ship. Thomson CSF Vega II f.c.s. for the 76-mm gun, 2 Canopus optronic directors. Torpedo tubes, Exocet, 30-mm AA, and Dagaie chaff not yet mounted at time of



Independiente (54)

HDW, 1984



Almirante Padilla (51) - with 8 MM 40 Exocet added

R. Scheina, 7-84

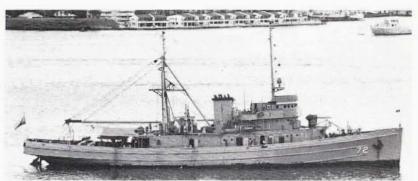
commissioning. Either the Israeli Barak or French 4-cell Crotale SAM system is planned for later installation.

Note: The two destroyers of the Halland class, Veinte de Julio (D 05) and Siete de Agosto (D 06) were to be disposed of 1983-84 upon arrival of the FS 1500-class frigates. The destroyer Santander (D 03, ex-U.S. Waldron, DD 699) was stricken in 1984, as was the frigate Boyaca (D 07, ex-U.S. Hartley, DE 1029)

CORVETTES

4 U.S. Cherokee- and Abnaki-class* former fleet tugs
 Bldr: Charleston
 Bldr: Charleston

| | Laid down | L | In serv. |
|--|-----------|----------|----------|
| RM 72 Pedro De Heredia (ex-Choctaw, ATF 70) | 4-4-42 | 18-10-42 | 21-4-43 |
| RM 73 Sebastian De Belalcazar (ex-Carib, ATF 82) | 7-9-42 | 7-2-43 | 24-7-43 |
| RM 74 RODRIGO DE BASTEDAS (ex-Hidatsa, ATF 102)* | 8-8-43 | 29-12-43 | 25-4-44 |
| RM 76 Bahia Solano (ex-Jacarilla, ATF 104)* | 25-8-43 | 25-2-44 | 26-6-44 |



Pedro de Heredia (RM 72)

L. & L. Van Ginderen, 11-81

D: 1,235 tons (1,675 fl) S: 16.5 kts Dim: 62.48 × 11.73 × 4.67

A: 1/76.2-mm DP

M: 4 G.M. 12-278 diesels (ex-ATF 102, ex-ATF 104: 4 Busch-Sulzer B5-539 diesels, electric drive); 1 prop; 3,000 hp

Electric: 300 kw Range: 15,000/8 Man: 75 tot.

REMARKS: RM 76, 73, 74 reactivated from U.S. Maritime Commission reserve fleet and transferred 15-3-79 for use as patrol and rescue ships. RM 72 transferred 1961; purchased 31-3-78; possibly stricken 1985.

PATROL BOATS

• 2 U.S. Asheville class

| | Bldr | Laid down | L | In serv |
|---|----------------------------------|-----------|---------|---------|
| P 111 Quito Sueño (ex-Tacoma, PG 92) | Tacoma Boat, Tacoma, Wash. | 24-7-67 | 13-4-68 | 14-7-69 |
| P 112 Albuquerque (ex-Welch, PG 93) | Peterson, Sturgeon Bay, Wisc. | 8-8-67 | 25-7-68 | 8-9-69 |



Albuquerque (P 112)

W. Donko, 7-83

D: 225 tons (245 fl) S: 40 kts (16 cruising) Dim: 50.14 (46.94 wl) × 7.28 × 2.9

A: 1/76.2-mm 50 DP Mk 34-4/12.7-mm mg (II × 2)

Electron Equipt: Radar: 1/LN-66, 1/SPG-50 Electric: 100 kw

M: CODOG: 1 G.E. 7LM-1500-PE 102 gas turbines; 13,300 hp (12,500 sust.) 2 Cummins VT 12-875M diesels, 1,650 hp (1,450 sust.); 2 CP props

Remarks: Leased 16-5-83, towed to Jonathan Corp., Norfolk, Va., for reactivation. Used on anti-drug patrol. Mk 63 GFCS for 76.2-mm gun. Offer of two more not taken up due to difficulty of maintaining engineering plant.

6 miscellaneous captured drug runners

. . . Turbu, . . . Tolu, . . . Serranilla, . . . Teniente De Navio Jose Maria Palas, . . . Teniente De Navio Alejandro Bal Domero Salgado, . . . Teniente Primo Alcala

Remarks: Characteristic unknown; placed in service 1981 to help combat drug traffic in the Caribbean. Most are ex-drug runners. *Rigel*, a former trawler used in this service, was lost 15-8-82.

RIVER PATROL BOATS AND CRAFT

♦ 2 Rio Hacha class Bldr: Unial Barranquilla (In serv. 1955)

CF 35 RIO HACHA CF 37 ARAUCA



Arauca (CF 37)

D: 170 tons (184 fl) S: 13 kts Dim: 47.25 × 8.23 × 1.0

A: 2/76.2-mm DP $(I \times 2) - 4/20$ -mm AA $(I \times 4)$

M: 2 Caterpillar diesels; 2 props; 800 hp Range: 1,000/12 Man: 27-43 tot.

REMARKS: Sister Leticia disarmed and equipped as a hospital boat.

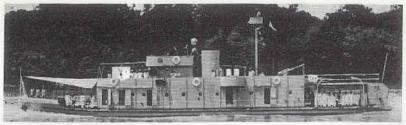
♦ CF 33 Cartagena Bldr: Yarrow, Glasgow (In serv. 1930)

D: 142 tons S: 15.5 kts Dim: 41.9 × 7.16 × 0.8

A: 2/76.2-mm - 1/20-mm AA - 4/7.7-mm mg Range: 2,100/15 Man: 39 tot.

M: 2 Gardner diesels; 2 props (in tunnels); 600 hp Fuel: 24 tons

Remarks: Principal parts of the ship protected against small arms.



Cartagena (CF 33)

OCEANOGRAPHIC RESEARCH SHIPS

♦ 2 Malpelo class Bldr: Martin Jansen, Leer, W. Germany BO 155 PROVIDENCIA (In serv. 5-81) BO 156 MALPELO (In serv. 4-81)



Malpelo (BO 156)

1983

D: 1,090 tons (fl) S: 13 kts Dim: 50.3 (44.0 pp) × 10.0 × 4.0 M: 2 M.A.N. 6-cyl. diesels; 1 Kort-nozzle prop; 1,570 hp Range: 16,000/11.5 Man: 9 officers, 18 men, 6 scientists

Remarks: Delivered 1981 for DIMAR (Dirección General Maritima Portuario), one for geophysical research, one for fisheries. White-painted. Naval manned. Bow-thruster, flapped Becker rudder. Prime contractor: Ferrostaal, Kiel. Both commissioned 24-7-81.

♦ 1 U.S. PCE 821-class former ASW escort Bldr: Pullman Standard Car Co., Chicago



San Andres (BO 151)

1976

D: 674 tons (858 fl) S: 15 kts Dim: 56.23 × 10.05 × 3.0 Electric: 180 kw M: 2 G.M. 12-567A diesels; 2 props; 1,800 hp Man: 60 tot.

Remarks: Purchased 5-6-69 and then converted. Possibly stricken.

♦ 1 U.S. former refrigerated stores lighter Bldr: Niagara SB, Buffalo, N.Y. BO 153 QUINDIO (ex-U.S. YFR 433) (In serv. 11-11-43)

D: 380 tons (600 fl) Dim: $40.4 \times 9.10 \times 2.5$ M: 1 Union diesel; 600 hp Man: 17 tot.

Remarks: Leased 7-64; purchased 31-3-78.

AUXILIARY SHIPS

• 1 U.S. Patapsco-class tanker, former gasoline tanker

BT 67 Tumaco Cargill, Inc. Sav- 23-12-43 22-7-44 19-2-45 (ex-U.S. Chewaucan, AOG 50) age, Minn.

D: 4,570 tons (fl) S: 14 kts Dim: 94.7 (89.0 pp) × 14.78 × 4.9 A: 2/76.2-mm DP (I × 2) M: 2 G.M. 16-278A diesels; 2 props; 3,300 hp Range: 8,350/11.5 Man: 45 tot.

COLOMBIA (continued) AUXILIARY SHIPS (continued)



Tumaco (BT 67)

1976

Remarks: Purchased 1-7-75. Foremast deleted, small lattice mast stepped for navigational radar. Cargo: 2,575 tons. Retains one Mk 52 radar GFCS (with Mk 26 radar) and one Mk 51 GFCS.

Bldr: Sander, Delfzijl, Netherlands (In serv. ♦ 1 small transport/cargo ship 1953)

TM 43 CIUDAD DE QUIBDO (ex-M/V Shamrock)

D: 633 tons S: 11 kts Dim: 50.3 × 7.2 × 2.8 M: 1 M.A.N. diesel; 1 prop; 390 hp Fuel: 32 tons Man: 11 tot.

Remarks: Purchased 1953.

♦ 2 hospital boats

Former river patrol boat, see under Rio Hacha class. Has 6 beds, BD 36 LETICIA surgery facilities, etc.

Bldr: Cartagena Naval DY, 1956 BD 33 Socorro

D: 70 tons S: 9 kts Dim: 25.0 × 5.5 × 0.75 M: 2 G.M. diesels; 270 hp Man: 10 tot.

Remarks: Originally fitted to carry 56 troops on the rivers, now used for surgery.

TUGS

♦ 1 U.S. Sotoyomo-class auxiliary ocean tug Bldr: Levingston SY, Orange, Texas

Laid down L In serv. RM 75 Bahia Utria (ex-Koka, ATA 185) 5-8-44 11-9-44 17-11-44

D: 534 tons (835 fl) S: 13 kts Dim: 43.6 × 10.3 × 4.0

A: 1/76.2-mm DP Mk 26 Electric: 120 kw

M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp Range: 8,000/8

Remarks: Transferred 1-7-71. Sister Bahia Honda lost 2-75.

♦ 1 ex-U.S. small harbor tug Bldr: Henry C. Grebe (In serv. 2-9-43)

RM 73 TENIENTE RICARDO SORZANO (ex-YTL 231)

D: 70 tons (80 fl) S: 9 kts Dim: 20.2 × 5.2 × 1.5 Electric: 15 kw

M: 1 Cooper-Bessemer diesel; 240 hp Fuel: 7 tons

Remarks: Loaned 1963; purchased 31-3-78.

♦ 1 old harbor tug (L: 1928) — possibly stricken

RM 71 ANDAGOYA

D: 117 grt S: 12 kts Dim: 28.0 × 6.1 × 3.0 M: 1 diesel; 400 hp

♦ 6 Capitan Castro class - for river use

RR 81 CAPITAN CASTRO RR 82 CANDIDO LEGUIZAMO RR 84 Capitan Alvaro Ruis

RR 86 CAPITAN RIGOBERTO GIRALDO RR 87 CAPITAN VLADIMIR VALEK

RR 88 TENIENTE LUIS BERNAL D: 50 tons S: 10 kts Dim: 20.0 × 4.25 × 0.75 M: 2 G.M. diesels; 260 hp

♦ 1 floating dry dock for river force use

Jaime Arias - D: 700 tons (fl) Capacity: 165 tons

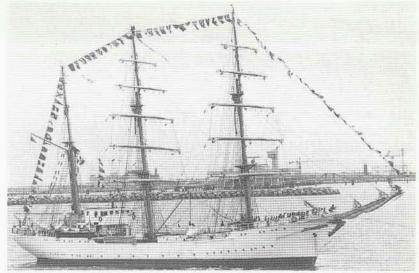
♦ 1 school sailing ship Bldr: Celaya, Bilbao, Spain (In serv. 7-9-68)

GLORIA

D: 1,300 tons (fl) **S:** 10.5 kts (on diesel) **Dim:** $64.7 \times 10.6 \times 6.6$ M: 1 diesel; 500 hp Sail areas: 1,400 m2 (bark-rigged)

> COAST GUARD (Cuerpo del Guardacosta)

Established 1981. The surviving craft of the former customs service fleet have been refitted and incorporated. A major function is anti-drug patrol.



Gloria

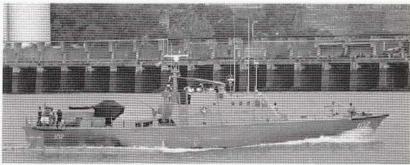
G. Gyssels, 7-85

PATROL BOATS

 2 U.S. 105-ft. Commercial Cruiser class La.

Bldr: Swiftships Inc., Berwick,

AN 101 Olaya Herrera (In serv. 16-10-81) AN 102 RAFAEL DEL CASTILLO Y RADA (In serv. 2-83)



Rafael del Castillo y Rada (102)

1983

D: 103 tons (fl) **S**: 25 kts **Dim**: $31.5 \times 6.6 \times 2.1$

A: 1/40-mm AA - 2/12.7-mm mg

M: 2 MTU 12V331 TC92 diesels; 2 props; 7,000 hp Range: 1,600/25; 2,400/15

Electric: 113 kw Man: 3 officers, 16 men

 2 Jorge Soto del Corval class Bldr: Rauma Repola SY, Rauma, Finland (In serv. 1971)

A 208 CARLOS ALBAN A 209 NITO RESTREPO

D: 100 tons (130 fl) S: 18 kts Dim: 34.0 × 6.0 × 1.9 A: 1/20-mm AA M: 2 MTU diesels; 2 CP props; 2,500 hp

Remarks: A 208 recommissioned 1980, A 209 in 1981. Sister J.S. del Corval hulked.

• 1 Pedro Gaul class Bldr: F. Schürenstedt, Bardenfleth, W. Germany A 206 CARLOS E. RESTREPO (In serv. 1964)

D: 85 tons (fl) S: 26 kts Dim: 34.7 × 5.5 × 1.8 A: 1/20-mm AA

M: 2 Maybach 12-cyl. diesels; 2 props; 2,500 hp

Remarks: Sisters Pedro Gaul (AN 204) and Estaban Jaramillo (A 205) hulked. A 206 recommissioned 1981.

Republic of the Comoros

MERCHANT MARINE (1984): 2 ships - 977 grt

PATROL CRAFT

2 Japanese Yamayuri class

Bldr: Ishihara, Takasago (In serv. 10-81)

Kasthala Ntringhui

D: 27 tons (40.3 fl) **S:** 20.7 kts **Dim:** $18.0 \times 4.3 \times 0.82$ (1.1 prop) **A:** . . . M: 2 Type RD 10T diesels; 2 props; 900 hp Man: 6 tot.

Remarks: Identical to craft in the Japanese Maritime Safety Agency.

COMOROS (continued)

AUXILIARIES

♦ 1 former French transport

Bldr: Toulon DY (In serv. 1957)

VILLE DE NIMACHOVA (ex-Issole)

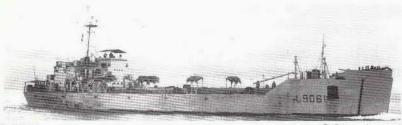
D: 600 tons (fl) **S**: 12 kts **Dim**: $49.0 \times 7.0 \times 2.2$

M: 2 diesels; 2 props; 1,000 hp Fuel: 36 tons Range: 2,600/10.8

Remarks: Stricken from French Navy and acquired by Comoros in 1981. Former "regional transport" with bow doors and beaching ramp for vehicle cargo. Cargo: 240 tons plus 60 tons on deck.

♦ 1 British LCT(8)-class tank-landing ship (In serv. 1945)

N. (ex-Fr. LCT 9061, ex-Br. Buttress, LCT(8) 4099)



L 9061

C. Limonier, 1975

D: 657 tons (1,000 fl) S: 12 kts Dim: 70.48 × 11.9 × 1.8 A: 2/20-mm AA (I × 2) — 1/120-mm mortar, Army model M: 4 Paxman diesels; 2 props; 1,840 hp Man: 29 tot.

REMARKS: Bought 7-65 by France, transferred by France, 1976.

CONGO People's Republic of the Congo

Personnel (1984): 250 total

Merchant Marine (1984): 21 ships - 8,458 grt

COASTAL NAVY

The naval forces are divided into coastal navy and the river navy. Plans to acquire three additional seagoing patrol boats were in hand during 1985; under consideration are three 357-ton Spanish "Cormoran"-class gunboats.

♦ 3 Spanish "Piraña"-class patrol boats

Bldr: Bazán, Cadiz - ordered 1980

P 601 Marien Ngouabi (ex-L'Intrépide) P 602 Les Trois Glorieuses (ex-Le Vaillant) P 603 Les Maloango (ex-Le Terrible) In serv.

10-11-82 1-83 3-83



Marien Ngouabi (P 601)

Bazán, 1983

D: 125 tons (138 fl) **S:** 25 **Dim:** 32.70 (30.60 pp) \times 6.15 \times 1.55

A: 1/40-mm -1/20-mm AA -2/12.7-mm mg (I \times 2) Electron Equipt: Radar: 1/Raytheon RM $1220/6 \times 8$

M: 2 M.A.N./Bazan V8V 16/8TLS diesels; 2 props; 3,200 hp Electric: 210 kw Range: 1,100/17 Man: 3 officers, 16 men

Remarks: CSEE Panda optronic GFCS. Renamed on delivery; arrived in Congo 1-6-83; by 8-84 badly needed overhaul, which began at builders in 1985.

♦ 6 Soviet Zhuk-class patrol boats (3 transferred 1982, 3 in 2-84)

V 301 V 302 V 303 V 304 V 305 V 306

D: 48 tons (60 fl) **S:** 34 kts **Dim:** 24.0 × 5.0 × 1.2 (1.8 props)

A: 4/14.5-mm mg (II × 2) Fuel: 10 tons Man: 12 tot.

M: 2 M50F-4 diesels; 2 props; 2,400 hp Range: 700/28; 1,100/15

♦ 1 Soviet Shershen-class former torpedo boat

D: 150 tons (170 fl) **S:** 45 kts **Dim:** $34.7 \times 6.7 \times 1.5$

A: 4/30-mm AA (II \times 2) Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt

M: 3 M503A diesels; 3 props; 12,000 hp Range: 460/42; 850/30

Remarks: Transferred 1979; torpedo tubes removed prior to delivery.

♦ 3 ex-Chinese Shanghai-II-class patrol boats (Transferred 3-75)

P 401 P 402 P 403

D: 122.5 tons (135 fl) **S:** 28.5 kts **Dim:** 38.78 × 5.41 × 1.55

A: 4/37-mm AA (II \times 2) -4/25-mm AA (II \times 2)

Electron Equipt: Radar: 1/Pot Head

M: 2 M50F-4, 1,200 hp and 2/12D6 diesels; 4 props; 4,220 hp Man: 36 tot.

Endurance: 7 days Electric: 39 kw Range: 750/16.5

RIVER NAVY

- ♦ 2 13-m and 2 11.4-m Arcor (France)-built patrol craft (In serv. 1982)
- ♦ 4 ex-Chinese Yu Lin-class patrol craft (Transferred 1966)

D: 9.8 tons (fl) **S:** 25 kts **Dim:** $13.0 \times 2.9 \times 1.1$ **A:** 1/12.7-mm mg **M:** 1 diesel; 1 prop; 300 hp

- ♦ 2 locally built small craft
- ♦ 10 outboard-powered small craft

COSTA RICA

Republic of Costa Rica

Personnel: 100 men

MERCHANT MARINE (1984): 27 ships - 19,750 grt

PATROL BOATS

♦ 1 105-foot Commercial Cruiser class siana

Bldr: Swiftships, Morgan City, Loui-

FP 1055 ISLA DEL COCO



Isla del Coco (FP 1055)

Swiftships, 4-85

D: 118 tons (fl) S: 36 kts Dim: 31.73 × 7.1 × 2.16

A: 2/12.7-mm mg (I \times 2)

M: 3 MTU 12V331 TC92 diesels; 3 props; 10,500 hp Range: 1,200/18

Man: 21 tot.

Remarks: Refitted 1984 to 3-85 by builders.

COSTA RICA (continued) PATROL BOATS (continued)

• 5 65-foot Commercial Cruiser class
siana (In serv. 1978)

Bldr: Swiftships, Morgan City, Louisiana (In serv. 1978)

FP 657 FP 658 FP 659 FP 660 FP 661

D: 33 tons (fl) S: 32 kts Dim: 19.77 × 5.56 × 1.98

A: $2/12.7 \text{ mm mg } (I \times 2)$

M: 2 MTU 8V331 diesels; 2 props; 1,400 hp Range: 1,200/18

REMARKS: See photo of FP 657, refitted 1985, in addenda. In 1985 Swiftships was also building two 34-ft and one 42-ft patrol craft for Costa Rica.

CUBA Republic of Cuba

Personnel: Approx. 9,000 men, including 1,000 naval infantry

Merchant Marine (1984): 418 ships — 959,171 grt (tankers: 19 - 70,474 grt)

SUBMARINES

♦ 3 Soviet Foxtrot class

D: 1,900/2,400 tons **S**: 16/15.5 kts **Dim**: $91.5 \times 7.5 \times 6.0$

A: 10/533-mm TT (6 fwd, 4 aft) - 22 torpedoes or 44 mines

M: 3/2,000 hp diesels, 3 electric motors; 3 props; 5,300 hp Endurance: 70 days Range: 11,000/8 snorkel Man: 78 tot.

Remarks: Transferred 1-79, 1-80, and 2-84. A non-operational Whiskey-class submarine was transferred 4-79 for use as a battery-charging barge.

FRIGATES

♦ 2 Soviet Koni class

Bldr: Zelenodolsk SY

356 Mariel ... N. . .



Mariel (356)

U.S. Navy, 7-84

D: 1,900 tons (fl) **S:** 27 kts **Dim:** $95.0 \times 12.8 \times 4.2$ (4.4 hull)

A: 1/SAN-4 SAM syst. (II \times 1; 20 missiles) — 4/76.2-mm DP (II \times 2) — 4/30-mm AA (II \times 2) — 2/RBU-6000 — mines

Electron Equipt: Radar: 1/Strut Curve, 1/Don-2, 1/Pop Group, 1/Hawk Screech, 1/Drum Tilt—IFF: 2/Square Head, 1/High

Pole A Sonar: 1/MF, hull-mounted

EW: 2 Watch Dog, 2/chaff RL (XVI \times 2)

M: CODAG: 1 gas turbine, 2 diesels; 3 props; 30,000 hp

Range: 1,800/14 Man: 120 tot.

Remarks: Mariel delivered 23-9-81; second unit arrived 2-84. Like the Algerian units, have a continuous deckhouse amidships.

GUIDED-MISSILE PATROL BOATS

♦ 13 Soviet Osa-II class



Cuban Osa-II - note man with SA-7 Grail missile amidships

U.S. Navy, 7-84

D: 190 tons (240 fl) **S:** 35 kts **Dim:** $38.6 \times 7.6 \times 2.0$

A: 4/SS-N-2 Styx (I \times 4) — 4/30-mm AA (II \times 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole A

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Transferred: 2 in 1977, 3 in 1978, 2 in 1979, 2 in 11-81, 2 in 1-82, 2 in 2-82. Carry SA-7 Grail (Strela) surface-to-air missiles in hand-held launchers.

♦ 5 Soviet Osa-I class

D: 175 tons (210 fl) S: 36 kts Dim: 38.6 × 7.6 × 1.8

A: 4/SS-N-2 Styx $(I \times 4) - 4/30$ -mm AA $(II \times 2)$

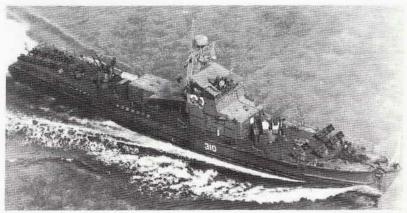
Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole A

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Two were delivered in 1972, two in 1973, and two in 1974; one deleted in 1981.

Note: All remaining Soviet Komar-class guided-missile boats were inoperable or had been disposed of by 1985.

♦ 4 Soviet S.O.-1 class



Cuban S.O.-1

U.S. Navy, 1972

D: 190 tons (215 fl) **S:** 28 kts **Dim:** $42.0 \times 6.1 \times 1.9$

A: 4/25-mm AA (II × 2) — 4/RBU-1200 ASW RL — 2/d.c. racks (24 d.c.)

Electron Equipt: Radar: 1/Pot Head M: 3 Type 40D diesels; 3 props; 7,500 hp Range: 340/28; 1,900/7 Man: 30 tot.

Remarks: Six were transferred in 1964 and six in 1967. Three additional believed discarded by 1983 and an additional 5 by 1985.

Note: The four remaining Kronshtadt-class patrol boats had been discarded by 1985.

♦ 21 Soviet Zhuk class



Cuban Navy Zhuk patrol boat

U.S. Navy, 7-84

D: 48 tons (60 fl) **S:** 34 kts **Dim:** $24.0 \times 5.0 \times 1.2$ (1.8 props)

A: 4/14.5-mm mg (II \times 2) Fuel: 10 tons Man: 12 tot.

M: 2 M50 F-4 diesels; 2 props; 2,400 hp Range: 700/28; 1,100/15

REMARKS: Transferred 1 in 12-71, 1 in 7-74, 4 in 10-75, 2 in 12-76, 4 in 1977-79, 6 in 1980 (including 3 in 12-80), and 3 in 1984. One or more additional 1984 transfers passed onto Nicaragua.

TORPEDO BOATS

♦ 9 Soviet Turya-class semi-hydrofoils

D: 215 tons (250 fl) S: 40 kts

Dim: 39.0×7.6 (12.5 over foils) \times 2.0 (4.0 over foils)

TORPEDO BOATS (continued)



Cuban Navy Turya 193

U.S. Navy, 7-84

A: 2/57-mm AA aft (II \times 1) — 2/25-mm AA (II \times 1) — 4/533-mm TT (I \times 4) Electron Equipt: Radar: 1/Pot Drum, 1/Muff Cob IFF: 1/Square Head, 1/High Pole B

M: 3 M504 diesels; 3 props; 15,000 hp Range: 400/38; 650/25 Man: 24 tot.

Remarks: First two delivered 2-79, the first foreign transfer of this class; 2 in 2-80, 2 in 1-81, 2 in 1-83, and 1 in 11-83. ASW capability omitted. Semi-retractable forward hydrofoils; stern planes on surface. Uses Osa-II hull and propulsion. Hand-held SA-7 Grail ("Sa-N-5") surface-to-air missiles were carried by mid-1984.

• 6 Soviet P 6 class

D: 56 tons (66.5 fl) **S:** 43 kts **Dim:** $25.3 \times 6.1 \times 1.7$

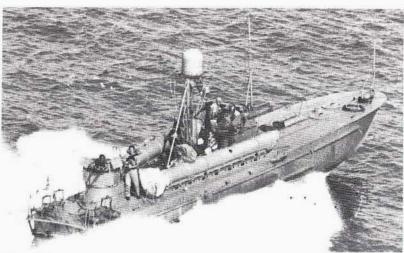
A: 4/25-mm AA (II × 2) - 2/533-mm TT - d.c.

Electron Equipt: Radar: 1/Skip Head

M: 4 M50 diesels; 4 props; 4,800 hp Range: 450/30 Man: 12 tot.

Remarks: Built post-1955. Delivered in 1962. Wooden hulls, Possibly no longer operational.

• 6 Soviet P 4 class



Cuban P 4

U.S. Navy

D: 19.3 tons (22.4 fl) **S:** 55 kts **Dim:** 19.3 × 3.7 × 1.0

A: 2/14.5-mm mg (aft) -2/450-mm TT Electron Equipt: Radar: 1/Skin Head

M: 2 M50 diesels; 2 props; 2,400 hp Man: 12 tot.

Remarks: Pre-1955. Delivered 1962-64. Aluminum, stepped-hydroplane hulls. Probably in poor condition. Half or more of the original dozen had been discarded by 1985.

MINE WARFARE SHIPS

3 Soviet Sonya-class coastal minesweepers

D: 380 tons (450 fl) S: 14 kts Dim: 48.8 × 8.8 × 2.1

A: 2/30-mm AA (II × 1) -2/25-mm AA (II × 1)

Electron Equipt: Radar: 1/Spin Trough IFF: 1/High Pole B, 1/Square Head

M: 2 diesels; 2 props; 2,400 hp Range: 1,600/14; 3,000/10 Man: 40 tot.

Remarks: Delivered 8-80, 10-80, and 1-85-all by tow. Wooden hulls, sheathed in glass-reinforced plastic.



Cuban Sonya under tow on delivery voyage

1980

♦ 9 Soviet Yevgenya-class inshore minesweepers Bldr: Srednyy Neva SY, Kolpind

D: 80 tons (90 fl) **S:** 11 kts **Dim:** $26.2 \times 6.1 \times 1.5$ **A:** 2/25-mm AA (II \times 1) Electron Equipt: Radar: 1/Spin Trough - IFF; 1/High Pole B M: 2 diesels; 600 hp Range: 300/10 Man: 12 tot.

REMARKS: Two transferred 1978, two in 1979, two in 12-80, 1 in 11-82, and 2 in 11-84; two others, delivered 9-84, were transferred to Nicaragua. Equipped to search for mines in depths of up to 30 m using towed television, marker buoys, and standard wire cable gear. Glass-reinforced-plastic construction.

AMPHIBIOUS WARFARE SHIPS AND CRAFT

 2 Soviet Polnocny B class Bldr: Polnocny SY, Gdansk (In serv. circa 1968)



Polnocny B under tow to Cuba

Skyfotos, 10-82

D: 800 tons (fl) S: 19 kts Dim: $74.0\times8.6\times2.0$ (aft) A: 4/30-mm AA (II \times 2) — 2/140-mm artillery RL (XVIII \times 2) Electron Equipt: Radar: 1/Spin Trough, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole B

M: 2 diesels; 2 props; 5,000 hp Range: 900/18; 1,500/14 Man: 30 tot. plus 200 troops

Remarks: The first, wearing transfer pendant, arrived in 9-82; the second, number 442, arrived 4-12-82. These particular units are configured for troop carrying, as evidenced by the large number (23) of 10-man life rafts carried. Cargo: 180 tons (5 tanks).

♦ 7 Soviet T-4-class landing craft (In serv. 1950s-1970s)

D: 70 tons (fl) S: 10 kts Dim: 19.0 × 4.3 × 1.0 M: 2 diesels; 2 props; 600 hp Man: 5 tot.

Remarks: Transferred 1967-74. Used as utility lighters.

HYDROGRAPHIC SURVEY SHIPS

♦ 1 Soviet Biya class

Bldr: Gdansk, Poland (1972-76)

H 103 Guama (ex-GS 186)

D: 750 tons (fl) **S:** 13 kts **Dim:** $55.0 \times 9.2 \times 2.6$

Electron Equipt: Radar: 1/Don-2 M: 2 diesels; 2 CP props; 1,200 hp

Range: 4,700/11 Man: 25 tot.

Remarks: Transferred 11-80. Carries one survey launch. Also useful as a buoy tender; one 5-ton crane.

1 converted trawler

H 101 SIBONEY D: 600 tons

Remarks: Built in Spain, 1972. Also used for training.

♦ 6 Soviet Nyryat-1 class.

H 91 H 92 H 93

D: 120 tons (fl) S: 12 kts Dim: 29.0 × 5.0 × 1.7 M: 1 diesel; 2 props; 450 hp Radar: 1/Spin Trough Range: 1,600/10

CUBA (continued)

HYDROGRAPHIC SURVEY SHIPS (continued)

Remarks: Date of transfer not known. Known in U.S.S.R. as GPB 480 class. Same class, with different equipment, also used as diving tenders.

AUXILIARIES

- ♦ 1 cargo ship: ARENAL (1965) 763 grt. Acquired 12-82. No other data available.
- ♦ 1 Soviet Pelym-class degaussing tender



Pelym-class degaussing tender en route Cuba

2-82

D: 1,300 tons (fl) S: 16 kts Dim: 65.5 × 11.6 × 3.4

A: None Electron Equipt: Radar: 1/Don-2

M: 2 diesels; 2 props; . . . hp Range: 4,500/12 Man: 70 tot.

Remarks: Arrived in Cuba 2-82 under tow. Probably intended to support the Foxtrotclass submarines.

 1 intelligence collector, former fishing boat Construcción Naval, Bilbao (In serv. 1967)

Bldr: Sociedad Española de

ISLA DE LA JUVENTUD (ex-Arminza)



Isla de la Juventud

U.S. Navy, 7-84

D: 1,556 grt S: 13 kts Dim: 70.0 × 12.6 × 5.4

M: 1 MWM diesel; 1 prop; 2,200 hp

Remarks: Equipped with a variety of electronic collection antennas. Converted around 1980.

• 1 yacht

GRANMA

Remarks: Small cabin cruiser in which Fidel Castro returned to Cuba in 1956. Maintained by the navy as a museum.

• 3 small service launches Blo

Bldr: U.S.A. (In serv. 1949)

A 1 A 2 A 3

D: 58 tons Dim: 22.50 × 4.6 × 1.6
 M: 2 Gray Marine diesels; 2 props; 225 hp

• 1 Soviet Okhtenskiy-class seagoing tug (In serv. 1960s)

CARIBE

D: 700 tons (950 fl) S: 13.3 kts Dim: 47.3 × 10.3 × 5.5 M: 2 diesels; 1 prop; 1,500 hp Range: 7,800/7 Man: 40 tot.

REMARKS: Transferred 1976.

♦ 2 Soviet Yelva-class diving tenders

D: 295 tons (fl) S: 12.4 kts Dim: 40.9 × 8.0 × 2.1
 M: 2 3D12A diesels; 2 props; 600 hp Radar: 1/Spin Trough

Remarks: Transferred 1978. Can support 7 divers to 60-m depths.

1 or more Soviet Poluchat-I-class torpedo retrievers



Cuban Navy Poluchat-I

198

D: 90 tons (fl) S: 18 kts Dim: 29.6 × 6.1 × 1.9

A: 4/14.5-mm mg (II × 2)

Electron Equipt: Radar: 1/Spin Trough - IFF: 1/High Pole A

M: 2 M50-F1 diesels; 2 props; 1,800 hp Range: 450/17; 900/10 Man: 20 tot.

Remarks: Transfer date uncertain. Equipped for patrol boat duties as well as for retrieving torpedoes via a stern ramp.

• 1 Soviet Whiskey-class battery-charging barge

D: 1,050 tons **Dim:** $75.0 \times 6.3 \times 4.8$

Electric: 3,500 kw

Remarks: Former submarine, transferred under tow 4-79 with propellers removed, torpedo tubes sealed, and periscopes removed, for use as a charging station for the Foxtrot-class submarines.

COAST GUARD

• 7 craft

GF 528 GF 725 GF 825 GF 720 Similar to 40-foot U.S. Coast Guard small craft GF 101 GF 102 GF 701 Similar to U.S. Coast Guard small craft

Remarks: Assigned to the Department of the Interior. Hull numbers painted in red to distinguish these boats from naval ships.

MARTI

FINLAY

• 1 patrol craft

GUANABACOA Bldr: Cadiz, Spain (L: . . .)

S: 22 kts

• 6 fast launches Bldr: Spain, 1971-72

Camilo Cienfuegos Maceo

REMARKS: No other information available.

ESCAMBRAY CUARTEL MONCADA

CYPRUS

Republic of Cyprus

 $\label{eq:merchant} \begin{array}{l} \text{Merchant Marine (1984): 737 ships--6,727,887 grt (tankers: 79--3,348,388 grt)} \\ \text{Two Agusta-Bell 47G helicopters are assigned coastal patrol duties.} \end{array}$

♦ 2 patrol boats Bldr: Ch. Navals de l'Estérel, Cannes

APHRODITE (In serv. 12-82) SALAMIS (In serv. 24-5-83)

D: 96 tons (fl) S: 32 kts Dim: 32.1 × 6.45 × 1.9

A: 1/40-mm AA - 1/20-mm AA

M: 2 MTU diesels; 2 props; 4,000 hp Range: 1,500/15

Remarks: Wooden construction. First unit ordered 9-81. Salamis powered by SACM diesels producing 4,640 hp.

ENMARK

Kingdom of Denmark

Personnel (1984): 5,800 men (1,300 officers, 3,200 enlisted, 1,300 conscripts), plus 2,600 civilians. There are 10,000 Naval Reservists and 5,200 members of the Home

Merchant Marine (1984): 1,101 ships - 5,211,262 grt (tankers: 66 ships - 2,557,088 grt)

NAVAL AVIATION: Eight Mk 80 Lynx helicopters, the first of which was delivered 15-5-80. The Air force took delivery of three U.S. Gulfstream G III Maritime Patrol Aircraft during 1981-82.



Danish Westland Mk 80 Lynx

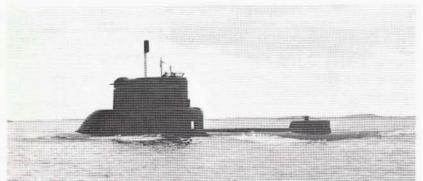
Danish Navy

SUBMARINES

Note: Financial restrictions having precluded the desired construction of six German Type 210 submarines to replace the current generation, the Danish Government first sought to lease German Navy Type 206 units. Rebuffed at this, it turned to Norway, where negotiations for the purchase of three Kobben-class submarines were underway in 1985 (data in Norwegian section).

♦ 2 German Type 205

| | Bldr | Laid down | L | In serv. |
|-------------------|----------------|-----------|----------|----------|
| S 320 NARHVALEN | RDY Copenhagen | 16-2-65 | 10-9-68 | 27-2-70 |
| S 321 Nordkaperen | RDY Copenhagen | 20-1-66 | 18-12-69 | 22-12-70 |



Narhvalen (S 320)

L. & L. Van Ginderen, 6-85

D: 370 light/430 surf./480 tons S: 10/17 kts Dim: 45.41 × 4.60 × 3.80 (surf.) A: 8/533-mm TT fwd Man: 22 tot.

Electron Equipt: Radar: 1/Thomson-CSF Calypso

Sonar: 1/SRS-M1H, 1/GHG AN5039A1

M: 2 MTU 820 Db, 600-hp diesels; 2/405-kw generators, 1/2,300 hp motor

Remarks: Modeled on the German Type 205 and Norwegian Type 207 (Kobben class).

2 Delfinen class

| | Bldr | Laid down | L | In serv. |
|---------------------|----------------|-----------|---------|----------|
| S 327 Spaekhuggeren | RDY Copenhagen | 1-12-54 | 20-2-57 | 27-6-59 |
| S 329 Springeren | RDY Copenhagen | 3-1-61 | 26-4-63 | 22-10-64 |



Spaekhuggeren (S 327)

L. & L. Van Ginderen, 4-84

D: 595/643 tons S: 13/12 kts Dim: 54.0 × 4.7 × 3.8

A: 4/533-mm TT fwd

M: Burmeister & Wain 12-cyl. diesels, 2 motors; 2 props; 1,200 hp

Range: 4,000/8.5 Man: 33 tot.

REMARKS: S 329 built with U.S. "Offshore" funds, as U.S. SS 554. Diving depth: 100-m. Sister Tumleren (S 328) stricken 8-81, and Delfinen (S 326) was decommissioned 1983 and stricken 1985.

FRIGATES

2 Peder Skram class

| | Bldr | Laid down | L | In serv. |
|---------------------|------------------|-----------|---------|----------|
| F 352 Peder Skram | Helsingør Vaerft | 25-9-64 | 20-5-65 | 30-6-66 |
| F 353 HERLUF TROLLE | Helsingør Vaerft | 18-12-64 | 8-9-65 | 16-4-67 |



Peder Skram (F 352)

1980



Herluf Trolle (F 353) - with 5 Harpoon aboard

L. & L. Van Ginderen, 5-84

D: 2,030 tons (2,720 fl) S: 28 kts (16.5 diesel)

Dim: 112.5 (108.0 pp) × 12.0 × 3.6

A: 8/Harpoon SSM (IV × 2) — 1 NATO Sea Sparrow SAM system (VIII × 1) — 2/127-mm 38-cal. DP, U.S. Mk 30 (II × 1) - 4/40-mm AA (I × 4) - 4/533mm TT (I × 4) -1 d.c. rack

Electron Equipt: Radar: 1 Skanter 009, 1/CWS-2, 1/CWS-3, 3 M-46 firecontrol, 1/Mk 91 Mod. 1 fire-control (2 radar directors)

Sonar: 1 Plessey PMS 26-EW: Decca Racal Cutlass intercept M: CODOG propulsion: 2 G.M. 16-567D diesels (4,800 hp); 2 Pratt & Whitney

PWA GG 4A-3 gas turbines (44,000 hp); 2 CP props

Man: 200 tot.

Remarks: Danish design, built with U.S. "Offshore" funds. Speed with diesels: 16 knots. There are two radar directors for the Mk 91 Mod. 1 Sea Sparrow system, which, along with Harpoon, was added 1977-79, as was the CEPLO computerized tactical data system. The torpedo tubes fire Swedish Type 61 wire-guided torpedoes. Plessey AWS-4 will replace one of the search radars. F 353 had a serious engine-room fire, 15-7-82, recommissioning after repairs in 10-83.

Note: Plans call for replacing these ships in the 1990s with two "Standard-flex 2,000"

♦ 3 Nils Juel (Type KV 72) class Bldr: Aalborg Vaerft

| | Laid down | L | In serv. |
|--------------------------|-----------|---------|----------|
| F 354 Nils Juel | 20-10-76 | 27-9-78 | 22-8-80 |
| F 355 Olfert Fischer | 6-12-78 | 15-1-80 | 16-10-81 |
| F 356 PETER TORDENSKJOLD | 3-12-79 | 2-81 | 2-4-82 |

D: 1,100 tons (1,320 fl) S: 30 kts (20 on a diesel)

Dim: 84.0 (80.0 pp) × 10.3 × 3.1

A: 8/Harpoon SSM (IV × 2) - 1 NATO Sea Sparrow SAM (VIII × 1)-

1/76-mm OTO Melara Compact DP-1 d.c. rack

Electron Equipt: Radar: 1/Plessey AWS-5, 2 Skanter 009, 1 Phillips 3-cm, 1 Phillips 9 LV 200 GFCS (with Type 771 low-light t.v. tracker), 1/Mk 91 Mod. 1 MFCS (2 dir.)

Sonar: Plessey PMS-26

EW: Decca-Racal Cutlass passive

M: CODOG: 1 G.E. LM-2500 gas turbine (26,600 hp), 1 MTU 20V-956 TB82 diesel (4,800 hp); 2 CP props

Range: 800/28; 2,500/18 Electric: 1,500 kw (3,500-kw diesel sets)

Fuel: 130 tons Man: 18 officers, 9 CPO, 63 men

Remarks: Ordered 5-12-75. Planned ASW torpedo system not installed. Two Breda SCLAR chaff/flare RL not yet added. NATO Sea Sparrow system, with no reloads,

FRIGATES (continued)



Nils Juel (F 354) - with 6 Harpoon aboard

L. & L. Van Ginderen, 4-85



Olfert Fischer (F 355)

Official, 1982

has two radar directors. DataSAAB CEPLO data system. F 355 commissioning delayed by fire 5-81. Planned to receive U.S. RAM (Rolling Airframe Missile) SAM system, using two lightweight, 8-10-missile launchers per ship.

FISHERIES PROTECTION FRIGATES

♦ 1 modified Hvidbjørnen class Bldr: Aalborg Vaerft

Laid down L In serv. F 340 Beskyterren 15-12-74 27-5-75 27-2-76



Beskyterren (F 340) - with Lynx on deck

Danish Navy, 1983

D: 1,970 tons (fl) S: 18 kts Dim: 74.4 × 11.8 × 4.5 A: 1/76.2-mm DP—1/Lynx helicopter Man: 60 tot. Electron Equipt: Radar: 1/CWS-1, 1/Skanter 009 Sonar: 1/Plessey PMS-26

M: 4 Burmeister & Wain Alpha diesels; 1 CP prop; 7,440 hp Range: 6,000/13 (one engine)

Remarks: Serves as a fisheries-protection ship. An OTO Melara Compact 76-mm gun was to have been fitted. Plessey AWS-6 to replace CWS-1 radar.

• 4 Hvidbjørnen class

| | Bldr | Laid down | L | In serv. |
|-------------------|-----------------------|-----------|----------|----------|
| F 348 HVIDBJØRNEN | Aarhus Flydedok | 6-61 | 23-11-61 | 12-62 |
| F 349 VAEDDEREN | Aalborg SY | 10-61 | 6-4-62 | 3-63 |
| F 350 Ingolf | Svendborg Skibsvaerft | 12-61 | 27-7-62 | 6-63 |
| F 351 FYLLA | Aalborg SY | 6-62 | 18-12-62 | 7-63 |

D: 1,345 tons (1,650 fl) S: 18 kts Dim: 72.6 × 11.6 × 4.9 A: 1/76.2-mm DP — 1/Lynx helicopter Man: 10 officers, 60 men



Ingolf (F 350)

L. & L. Van Ginderen, 7-85

Electron Equipt: Radar: 1/CWS-1, 1/Skanter 009 Sonar: 1 Plessey PMS-46

M: 4 G.M. 16-567C diesels; 1 CP prop; 6,400 hp Range: 6,000/13

Remarks: Reinforced bow. F 350, used for hydrographic surveying, has no gun or helicopter, but carries four 13-meter SKA-1-class survey launches on her flight deck. Plessey AWS-6 to replace CWS-1 radar. These ships may be discarded, pending a 1985 survey of Denmark's fishing industry.

GUIDED-MISSILE BOATS

| ♦ 10 Willemoes class | | Bldr: Frederikshavn S | Ž. |
|----------------------|----------|-----------------------|----------|
| | In serv. | | In serv. |
| P 540 BILLE | 10-76 | P 545 Norby | 22-11-77 |
| P 541 Bredal | 21-1-77 | P 546 RODSTEEN | 16-2-78 |
| P 542 Hammer | 1-4-77 | P 547 SEHESTED | 19-5-78 |
| P 543 HUITFELDT | 15-6-77 | P 548 Suenson | 10-8-78 |
| P 544 KRIEGER | 22-9-77 | P 549 WILLEMOES | 7-10-76 |



Rodsteen (P 546) - empty racks for 4 Harpoon SSM L. & L. Van Ginderen, 6-85



Suenson (P 548) - no EW dome atop mast

L. & L. Van Ginderen, 6-85

D: 232 tons (265 fl) **S:** 40 kts (36 normal) — diesels: 12 kts **Dim:** 46.1 (42.4 pp) \times 7.4 \times 2.1 (2.7 over props) **A:** 4/Harpoon SSM — 1/76-mm OTO Melara Compact — 2/533-mm TT

GUIDED-MISSILE BOATS (continued)

Electron Equipt: Radar: 1/9GA-208, 1/NWS-3, 1/9LV 200 fire-control M: CODOG: 3 Rolls-Royce Proteus 52M/544 gas turbines; 2 G.M. 8V-71 diesels; 3 Liaan CP props; 12,750/800 hp

Electric: 420 kw Range: 400/36 Man: 5 officers, 21 men

Remarks: Based on the Swedish Lürssen-designed Spica class and ordered in 1972. The torpedoes are Swedish Type 61s, wire-guided, with a range of 20,000 meters. Endurance is normally 36 hours. Two triple 103-mm flare rocket rails on pilothouse sides. Decca-Racal Cutlass intercept system ordered 1980 for all. Have TORCI torpedo f.c.s. and CEPLO tactical data system. Normally operate with only two Harpoon aboard. Can carry 20 mines in lieu of SSM and torpedoes or 6 torpedo tubes and no SSM.

TORPEDO BOATS

• 6 Søløven class

| | Bldr | Laid down | L | In serv. |
|------------------|--------------------|-----------|---------|----------|
| P 510 Søløven | Vosper, Portsmouth | 8-62 | 19-4-63 | 12-2-65 |
| P 511 SØRIDDEREN | Vosper, Portsmouth | 10-62 | 22-8-63 | 10-2-65 |
| P 512 SØBJORNEN | RDY Copenhagen | 7-63 | 19-8-64 | 9-65 |
| P 513 Søhesten | RDY Copenhagen | 8-63 | 31-3-65 | 6-66 |
| P 514 SØHUNDEN | RDY Copenhagen | 2-64 | 12-1-66 | 1-67 |
| P 515 Søulven | RDY Copenhagen | 6-64 | 27-4-66 | 3-67 |



Søløven (P 510) - with 1/40-mm, 4 TT, 1/20-mm

L. & L. Van Ginderen, 6-85

D: 95 tons (114 fl) S: 50 kts (10 on diesel)

Dim: $30.26 (27.44 \text{ pp}) \times 7.3 \times 2.15$

A: 1 or 2/40-mm AA (I × 2) - 2 or 4/533-mm TT

Electron Equipt: Radar: 1/NWS-1

M: Rolls-Royce Marine Proteus gas turbines; 3 props; 10,500 hp (12,750 max); 2

G.M. 6V-71 diesels, 530 hp, for cruising

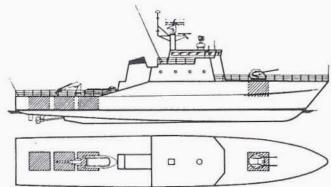
Man: 4 officers, 22 men

Remarks: A modification of the British Brave class. All normally in reserve. Four 50-mm flare RL on fwd 40-mm shield. P 510 was built as PT 821 with U.S. funds. Four of these craft were to be refitted, the other two discarded, in 1984-85; they will receive RADAMEC Type 409 optronic gun directors. Can be configured with 2/40-mm and 2 TT or 1/40-mm and 4 TT. A 20-mm AA can be carried aft.

PATROL BOATS

♦ 0 (+6+10) "Standard-flex 300"-class multifunction Bldr: Aaborg Vaerft

| | | Laid | down | L | In | se | rv |
|------|-----|------|------|---|----|----|----|
| P N. | | | | | 1 | 98 | 37 |
| P N. | | | | | | | |
| P N. | 2.2 | - | | | | | |
| P N. | | | | | | | |
| P N. | | | | | | | |
| P N | | | | | | | |



Standard-flex 300 in patrol-boat configuration (Shaded areas show interchangeable mission module locations)

D: 320 tons S: 35 kts gas turbine/20 diesel/6 electric

Dim: 44.0 × 8.5 × . .

A: Patrol boat: 2/30-mm AA

Torpedo boat: 1/76-mm OTO Melara DP, Harpoon SSM, 2/533 mm TT. SAM syst.

Minelayer: 1/20-mm AA, SAM syst.

Minesweeper: 2/30-mm AA

Electron Equipt: Radar: 1/nav., 1/9GA-208, 1/9LV-200

EW: . . . Sonar: .

M: CODAG: 1 gas turbine, 2 diesels; 3 props; . . . hp-electric drive for minesweeping/laying - bow-thruster

Man: 15-17 tot. (28 accom.) Range: .

Remarks: Glass-reinforced plastic construction concept intended to replace Daphneclass patrol boats, existing minesweepers, and the Søløven-class torpedo boats. First six approved for construction 1984, with first, perhaps optimistically, scheduled for delivery in 1986. As patrol boats (the initial configuration) will carry a twin AA mount forward and a rigid inflatable inspection boat aft; as torpedo boats will carry a 76-mm gun forward with missiles and torpedo tubes aft; as a minelayer will carry an undetermined SAM system forward, a light AA aft, mine rails, and a crane; in mine countermeasures configuration, will have a twin AA forward, sweep gear aft, and a SAM system. All configurations are intended to be interchangable, using modular, plug-in equipment. First unit ordered 7-85 to a Karlskronavarvet design.

3 Agdlek class for fisheries protection

Bldr: Svendborg Vaerft In serv.

Y 386 AGDLEK 12-3-74 Y 387 AGPA 14-5-74 Y 388 TULUGAQ 26-6-79



Tulugaq (Y 388)

1979

D: 330 tons (fl) **S**: 12 kts **Dim**: $31.4 \times 7.7 \times 3.3$ **A**: 2/20-mm AA (I × 2) Electron Equipt: Radar: 2/Terma 20T48 (NWS-3)

M: 1 Burmeister & Wain Alpha diesel; 800 hp Man: 15 tot.

Remarks: For fisheries patrol service in Greenland waters. Can carry two survey launches. Y 388 has only one radar, is .3-m longer, and can make 14 kts.

9 Barsø class Bldr: Svendborg

Y 300 Barsø Y 302 Romsø Y 304 THURØ Y 306 FARØ Y 308 Rомø Y 301 Drejø Y 305 Vejrø Y 307 Laesø Y 303 Samsø



Farø (Y 306) - note trawl boards aft

L. & L. Van Ginderen, 1981

PATROL BOATS (continued)

D: 155 tons (fl) S: 11 kts Dim: $25.5 \times 6.0 \times 2.8$ A: 2/20-mm AA (I \times 2) Electron Equipt: Radar: 1/Terma 20T48 (NWS-3) M: 1 diesel; 1 prop; 385 hp

Remarks: The first six were completed in 1969 and the last three 1972-73. For fisheries protection duties.

♦ 2 Maagen-class fisheries patrol boats

Bldr: Helsingør (In serv. 5-60)

Y 384 MAAGEN Y 385 MALLEMUKKEN



Maagen (Y 384) - with auxiliary sails set

Danish Navy, 1983

D: 175 tons (190 fl) S: 10 kts Dim: 27.0 × 7.2 × 2.75

A: 2/20-mm AA (I × 2)

Electron Equipt: Radar: 1/Terma 20T48 (NWS-3), 1/Skanter 009

M: Diesel; 1 prop; 350 hp

REMARKS: Based in Greenland.

• 8 Daphne-class antisubmarine patrol boats Bldr: RDY, Copenhagen

| | Laid down | L | In serv. |
|----------------|-----------|----------|----------|
| P 530 DAPHNE | 4-60 | 10-11-60 | 19-12-61 |
| P 531 DRYADEN | 7-60 | 1-3-61 | 4-4-62 |
| P 533 HAVFRUEN | 3-61 | 4-10-61 | 20-12-62 |
| P 534 Najaden | 9-61 | 20-6-62 | 26-4-63 |
| P 535 NYMFEN | 4-62 | 1-11-62 | 4-10-63 |
| P 536 NEPTUN | 9-62 | 29-5-63 | 18-12-63 |
| P 537 RAN | 12-62 | 10-7-63 | 15-5-64 |
| Р 538 Rота | 6-63 | 26-11-63 | 20-1-65 |



Dryaden (P 531)

Danish Navy, 1983

D: 150 tons (170 fl) S: 20 kts Dim: $38.0 \times 6.75 \times 2.0$ A: 1/40-mm AA=2 d.c. projectors=2 d.c. racks Man: 23 tot. Electron Equipt: Radar: 1/NWS-3—Sonar: Plessey PMS 26 M: 2 Maybach diesels, 1,300 hp, and 1 Foden cruise FD-6 diesel, 100 hp; 3 props

Remarks: P 530, P 534, and P 536, which were paid for with U.S. "Offshore" funds as PGM 47, PGM 49, and PGM 50, are now completely disarmed. *Haumanden* (P 532) was struck in 1978; others may follow soon. Will be the first class to be replaced by the "Standard-flex 300" units.

PATROL CRAFT

♦ 3 Y 377 class Bldr: Botved (In serv. 1975)

Y 377 Y 378 Y 379

D: 9 tons (fl) S: 27 kts Dim: 9.8 × 3.3 × 0.9

Electron Equipt: Radar: 1/NWS-3

M: 2 Volvo Penta inboard/outboard diesels; 2 props; 600 hp

♦ 2 Y 375 class

Bldr: Botved (In serv. 1974)

Y 375 Y 376



Y 376

1978

D: 12 tons (fl) S: 26 kts Dim: 13.3 × 4.5 × 1.1 Electron Equipt: Radar: 1/NWS-3 M: 2 diesels; 2 props; 680 hp

PATROL CRAFT MANNED BY THE HOME GUARD

♦ 6 MHV 20 class Bldr: Ejvinds, Plastikbodevaerft Svendborg (In serv. 1974-81)

MHV 20 MHV 21 MHV 22 MHV 23 MHV 24 MHV 25



MHV 25

H. Ehlers, 4-85

D: 60 tons (fl) S: 15 kts Dim: 16.5 × 4.2 × 2.0 A: 1/12.7-mm mg M: 2 MTU diesels; 2 props; 500 hp Radar: 1/NWS-3

Remarks: Additional units of these craft were intended to replace the older MHV units, but no further units were authorized. Glass-reinforced plastic hulls.

♦ 7 MHV-90 class (In serv. 1974-75)

MHV 90 MHV 91 MHV 92 MHV 93 MHV 94 MHV 95 MHV 96

D: 85 tons (130 fl) S: 10.7 kts Dim: 19.8 × 5.7 × 1.6 A: 1/20-mm AA M: 1 Burmeister & Wain diesel; 400 hp Radar: 1/NWS-3

3 MHV 70 class Bldr: Navy Yard, Copenhagen (In serv. 1958)
 MHV 70 MHV 71 MHV 72

D: 78 tons (130 fl) S: 10 kts Dim: 20.1 × 5.1 × 2.5 A: 1/20-mm AA aft Electron Equipt: Radar: 1/NWS-3 M: 1 diesel; 200 hp

PATROL CRAFT MANNED BY THE HOME GUARD (continued)



MHV 95

H. Ehlers, 4-85



MHV 71 - with new, enlarged pilothouse

Danish Navy, 1983

♦ 6 MHV 80 class (In serv. 1941)

MHV 81 (ex-Askø) MHV 82 (ex-Enø) MHV 83 (ex-Manø) MHV 84 (ex-Baagø) MHV 85 (ex-Hjortø) MHV 86 (ex-Lyø)



MHV 84

H. Ehlers, 4-85

D: 74 tons S: 11 kts Dim: $24.4 \times 4.9 \times 1.6$ A: 1/20-mm AA Electron Equipt: Radar: 1/NWS-3 M: 1 diesel; 350 hp

Remarks: In Home Guard service 1958. Former inshore minesweepers. Wooden hulls. The gun mount is not normally aboard.

• 31 smaller craft, including:

MHV 1, MHV 3 through MHV 15; MHV 51, MHV 52, MHV 54, MHV 56 through 64, MHV 65 through 68, MHV 74, 75. Small, wooden-hulled fishing boat designs. Most have an NWS-3 radar. No fixed armament.



MHV 60

H. Ehlers, 4-85

MINE WARFARE SHIPS

♦ 4 Falster-class minelayers

| | Bldr | Laid down | L | In serv. |
|----------------|----------------------|-----------|---------|----------|
| N 80 Falster | Nakskov Skibsvaerft | 4-62 | 19-9-62 | 7-11-63 |
| N 81 Fyen | Frederikshavn Vaerft | 4-62 | 3-10-62 | 18-9-63 |
| N 82 Møen | Frederikshavn Vaerft | 10-62 | 6-6-63 | 20-4-64 |
| N 83 SJAELLAND | Nakskov Skibsvaerft | 1-63 | 14-6-63 | 7-7-64 |



Sjaelland (N 83)

L. & L. Van Ginderen, 4-84



Møen (N 82)

Netherlands Navy, 1984

D: 1,880 tons (fl) S: 16.5 kts Dim: 77.0 (72.5 pp) \times 12.8 \times 3.4 A: 4/76.2-mm DP U.S. Mk 33 (II \times 2) — 400 mines (4 minelaying tracks) Electron Equipt: Radar: 1/CWS-2, 1/NWS-2, 1/NWS-3, 1/M-46 M: 2 G.M. 16-567D3 diesels; 2 CP props; 4,800 hp Fuel: 130 tons Man: 10 officers, 108 men

Remarks: NATO design. The Turkish ship *Nusret* is identical. N 82 is training ship for naval cadets. N 83 converted to submarine tender in 1976, to replace *Henrik Gerner* (can still lay mines). N 80 and N 82 built with U.S. "Offshore" funds as MMC 14 and MMC 15. Have 2/57-mm multiple chaff launchers. All to be refitted for service through 2000.

MINE WARFARE SHIPS (continued)

| ♦ 2 Lindormen-class coastal minelayers | Bldr: Svendborg |
|--|-----------------|
| | |

| | Laid down | L | In serv. |
|----------------|-----------|--------|----------|
| N 43 LINDORMEN | 20-1-77 | 7-6-77 | 26-10-77 |
| N 44 Loussen | 2-77 | 9-9-77 | 30-1-78 |



Loussen (N 44)

Maritime Photographic, 5-85

D: 575 tons (fl) S: 14 kts Dim: 43.3 (40.0 pp) × 9.0 × 2.65

A: 2/20-mm AA (I×2)-50 to 60 mines Electron Equipt: Radar: 1/NWS-3

M: 2 Wichmann 7AX diesels; 2 props; 4,200 hp Electric: 192 kw

Man: 27 tot.

Remarks: Built to replace the Lougen class. 20-mm AA not always mounted. Controlled minefield planters.

Note: The minelayer Langeland, in reserve since 1982, was stricken 1985.

♦ 6 ex-U.S. Adjutant- and Redwing*-class coastal minesweepers

| | Blar | In serv. |
|---------------------------------|--------------------------------|----------|
| M 572 ALSSUND (ex-MSC 128)* | Hiltebrand DD, Kingston, NY | 5-4-55 |
| M 573 Egernsund (ex-MSC 129)* | Hiltebrand DD, Kingston, NY | 3-8-55 |
| M 574 Grønsund (ex-MSC 256) | Stephen Bros. SY | 21-9-56 |
| M 575 GULDBORGSUND (ex-MSC 257) | Stephen Bros. SY | 11-11-56 |
| M 577 ULVSUND (ex-MSC 263) | Harbor BY, Terminal Isl., Cal. | 20-9-56 |
| M 578 VILSUND (ex-MSC 264) | Harbor BY, Terminal Isl., Cal. | 15-11-56 |
| | | |



Guldborgsund (M 575) - survey ship mode

M. Willis, 5-85

D: 350 tons (376 fl) S: 13 kts (8 sweeping)
Dim: 43.89 (41.50 pp) × 7.95 × 2.55 A: 1/40-mm AA

Electron Equipt: Radar: 1/NWS-3-Sonar: 1/UQS-1 Man: 38 tot.

M: 2 G.M. 8-268A diesels; 2 props; 1,000 hp Fuel: 40 tons Range: 2,500/10

Remarks: Hull entirely of wood. The first two are 405 tons (fl); they have davits abreast the stack to handle noise makers. M 575 has a charthouse between the stack and bridge so that she can act as a survey ship; she still has minesweeping equipment. Aarosund (M 571) stricken 1981, and Omosund (M 576) placed in reserve for use as cannibalization spares. In 3-83 it was announced that three of these ships will be modernized.

AUXILIARY SHIPS

◆ 4 SKA 11-class inshore survey launches (In serv. 1958-68)

SKA 11 SKA 12 SKA 13 SKA 14

D: 52 tons (fl) S: 12 kts Dim: 20.0 × 5.2 × 2.1
 M: 1 G.M. diesel; 540 hp

REMARKS: Stationed in Greenland.

♦ 4 inshore survey launches (In serv. 1958-68)

SKA 5 SKA 6 SKA 7 SKA 8



SKA 7

S Terzibaschitsch, 6-84

D: 27 tons S: 9 kts Dim: 13.0 × . . . × . . . Man: 6 tot. M: 1 diesel; . . . hp Electron Equipt: Radar: 1/Skanter 009

Remarks: Minesweeper Gulborgsund and frigate Ingolf also used in survey work, the latter being able to transport four of this class.

◆ 2 U.S. YO 65-class coastal oilers Indiana

Bldr: Jeffersonville Boat & Machine,

Laid down L In serv.
A 568 RIMFAXE (ex-YO 226) 21-4-45 20-7-45 22-10-45
A 569 SKINFAXE (ex-YO 229) 25-5-45 28-8-45 7-12-45



Skinfaxe (A 569)

D. Koop, 5-84

D: 440 tons (1,390 fl) S: 10 kts Dim: 53.0 × 9.75 × 4.0 A: 1/20-mm AA Electron Equipt: Radar: 1/NWS-3 Electric: 40 kw Man: 23 tot. M: 1 G.M. 8-278A diesel; 1 prop; 640 hp Fuel: 25 tons Range: 2,000/8

Remarks: Transferred 2-8-62. Cargo: 900 tons.

♦ 1 torpedo transport/retriever

A 558 SLEIPNER



Sleipner (A 558)

AUXILIARY SHIPS (continued)

D: 150 tons (fl) S: 9 kts Dim: 30.0 × . . . × . . . Electron Equipt: Radar: 1/NWS-3 M: 1 diesel; . . . hp

REMARKS: Former coastal cargo ship.

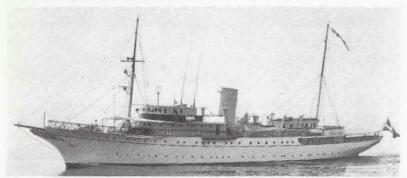
• 1 small torpedo retriever

TO 9 Munin - no data available

♦ 1 royal yacht Bldr: Royal DY, Copenhagen

L In serv.

A 540 DANNEBROG 10-10-31 1932



Dannebrog (A 540)

1980

D: 1,130 tons **S**: 14 kts **Dim**: $74.9 \times 10.4 \times 3.7$

Electron Equipt: Radar: 1/Skanter 009 Electric: 507 kVA

M: 2 Burmeister & Wain Alpha 6 T23L-KVO diesels; 2 CP props; 1,600 hp

Remarks: Re-engined, new electrical generating plant winter 1980-81. Does not wear pendant number assigned.

MINISTRY OF FISHERIES

♦ 1 "Osprey" FV 710-class fisheries patrol ship (In serv. 7-79)
Bldr: Frederikshavn SY

HAVØRNEN



Havørnen

1983

D: 320 tons (506 fl) **S:** 18 kts **Dim:** 49.98 (45.8 pp) \times 10.50 \times 2.75 **Electron Equipt:** Radar: 2/Furuno FRM-64

M: 2 Burmeister & Wain Alpha 16V23L-VO diesels; 2 CP props; 4,640 hp Range: 4,500/16 Man: 15 tot. (accommodations for 35)

Remarks: Has flight deck for one Lynx or Alouette-III helicopter and a stern ramp for a 6.5-m rubber inspection dinghy. Built to mercantile specifications, a modified British "Osprey" design.

♦ 1 fisheries research ship Bldr: Dannebrog, Aarhus

Dana (In serv. 1982)

D: 2,483 grt S: 15.5 kts Dim: 78.43 × 14.7 × . .

M: 2 diesels; 1 CP prop; 4,600 hp Man: 27 crew, plus 12 scientists

◆ 1 fisheries oceanographic ship (In serv. 1960)

SENS VAEVER

D: 280 tons (fl) S: 11.5 kts Dim: 30.53 × 6.35 × 3.15

M: 1 Burmeister & Wain 406 VD diesel; 1 prop; 420 hp Fuel: 20 tons

Range: 2,600/9 Man: 10 tot.

 2 Nordsøen-class salvage & rescue tugs 1968) Bldr: Frederikshavn DY (In serv.

NORDYLLAND NORDSØEN

D: 900 tons (fl) S: 14.5 kts Dim: 52.35 (45.75 pp) × 10.00 × 3.35 M: 2 Burmeister & Wain 8-23MTBF-308G diesels; 1 CP prop; 1,960 hp Electric: 472 kw Man: 12 tot.

MINISTRY OF TRADE AND SHIPPING

ICEBREAKERS

Note: Danish icebreakers all civilian-manned and are subordinate to the Ministry of Trade and Shipping. During summer months they are maintained by the Danish Navy at Frederikshavn.

♦ 1 new construction

Bldr: Svendborg (L: 6-80)

THORBJORN



Thorbjørn

H. Ehlers, 4-85

D: 2,250 tons (fl) S: 16.5 kts Dim: 67.5 × 15.3 × 4.70

M: 4 Burmeister & Wain Alpha diesels, electric drive; 2 props; 6,800 hp

Remarks: Can be used for hydrographic surveys by the Navy when not needed for icebreaking, and can also act as a tug.

♦ 2 Danbjørn class

Bldr: Lindø Vaerft, Odense

Danbjørn (In serv. 1965) Isbjørn (In serv. 1966)



Danbjørn

Danish Navy

D: 3,685 tons (fl) S: 14 kts Dim: 76.8 × 16.8 × 6.0 M: Diesel-electric; 2 props; 11,880 hp Man: 34 tot.

♦ 1 Elbjørn class Bldr: Frederikshavn Vaerft (In serv. 1953)

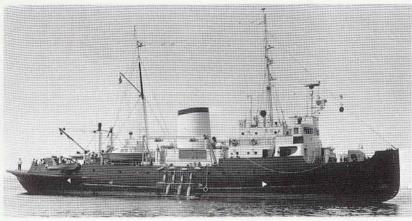
ELBJØRN

D: 898 tons (1,400 fl) S: 12 kts Dim: 47.0 × 12.1 × 4.35

M: Diesel electric; 2 props; 3,600 hp

Remarks: Used by Danish Navy for survey work in the summer.

DENMARK (continued) ICEBREAKERS (continued)



Elbjørn

Danish Navy

MINISTRY OF THE ENVIRONMENT (These units are manned by naval and civil personnel)

POLLUTION CONTROL SHIPS AND CRAFT

Bldr: Ørnskov SY, Frederikshavn ♦ 2 Gunnar Thorson class GUNNAR THORSON (In serv. 8-5-81) GUNNAR SEIDENFADEN (In serv. 2-7-81)



Gunnar Thorson

Danish Navy, 1981

D: 672 tons (750 fl) **S:** 14.5 kts **Dim:** 55.6 (47.9 pp) \times 12.3 \times 3.9 **M:** 2 Burmeister & Wain Alpha 8V-23L-VO diesels; 2 CP props; 2,320 hp

♦ 2 "Sea Truck" design

Bldr In serv. Carl B. Hoffman SY, Esbjerg Søren Larsen SY, Nykøbing Mors METTE MILJO 22-2-80 MARIE MILJO 22-2-80

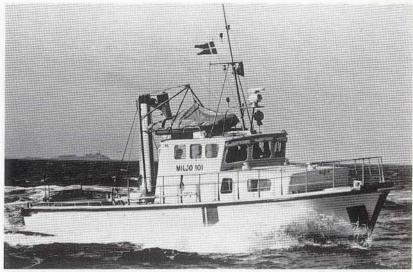


Mette Miljo

H. Ehlers, 4-85

D: 157 tons S: 10 kts Dim: 29.8 × 8.0 × 1.6 M: 2 Grenaa diesels; 2 props; . . . hp Man: 8 tot.

• 2 Miljo 101 class Bldr: Eljvinds, Svendborg Мп. Jo 101 (In serv. 1-11-77) Мп. Jo 102 (In serv. 1-12-77)



Miljo 101

Danish Navy, 1982

D: 16 tons S: 15 kts Dim: 16.2 × 4.2 × . M: 1 MWM TBD 232 V12 diesel; 1 prop; 454 hp Range: 350/8 Man: 3 tot.

Remarks: Glass-reinforced plastic construction. Carry spill containment gear.

DJIBOUTI

Republic of Djibouti

MERCHANT MARINE (1984): 7 ships - 3,108 grt

Bldr: Plascoa, France

♦ 2 glass-reinforced plastic patrol craft N. . . (In serv. 3-85) N. . . (In serv. 10-85)

D: 30 tons (light) **S:** . . . **Dim:** $23.0 \times 5.5 \times 1.5$ A: 1/20-mm AA M: 2 diesels; 2 props; . . . hp Range: 1,000/. . . Man: 15 tot.

REMARKS: Ordered 10-84.

♦ 1 ex-French patrol craft

Bldr: Tecimar (In serv. 1974)

D: 30 tons (fl) S: 25 kts Dim: 13.3 × 4.1 × 1.1

A: 1/12.7-mm and 1/7.5-mm mg M: 2 G.M. 6V71 diesels; 2 props; 240 hp

Remarks: Transferred 1977 from the French colonial police at Djibouti. Glass-reinforced plastic construction.

DOMINICA

MERCHANT MARINE (1984): 3 ships - 890 grt

COAST GUARD

♦ 1 U.S. 65-ft commercial cruiser-class patrol boat Bldr: Swiftships, Inc., Morgan City, Louisiana, U.S.A.

P-04 Melville (In serv. 2-5-84)

D: 34 tons (fl) S: 23 kts Dim: $19.96 \times 5.58 \times 1.52$ A: Small arms Electron Equipt: Radar: 1/Raytheon 1210

M: 2 G.M. 12V71 TI diesels; 2 props; 1,350 hp Range: 500/18 Electric: 20 kw Man: 6 tot.

Remarks: One of three sisters presented to Caribbean Island republics by the U.S. government, the others going to Antigua-Barbuda and St. Lucia. Aluminum construction. Blue hull, white upperworks.

DOMINICAN REPUBLIC

Personnel (1984): 370 officers and 3,630 men

MERCHANT MARINE (1984): 37 ships - 37,192 grt (tanker: 2 ships - 1,492 grt)

FRIGATE

♦ 1 Canadian "River" class

Bldr L In serv.

451 Mella Davie, S.B., Lauzon, Quebec 6-7-44 13-12-44 (ex-Presidente Trujillo, ex-Carlplace)



Mella (F 451)

1981

D: 1,445 tons (2,300 fl) **S**: 19 kts **Dim**: $92.35 \times 11.45 \times 4.3$

A: 1/76.2-mm DP—2/40-mm AA (II \times 1) —4/20-mm AA—2/47-mm saluting guns

Electron Equipt: Radar: 1/SPS-64

M: 2 sets triple-expansion; 2 props; 5,500 hp Boilers: 2 (3-drum) Fuel: 645 tons Range: 7,700/12 Man: 15 officers, 135 men

Remarks: Bought in 1947. Serves as fleet flagship and as a training ship; can carry 50 cadets.

CORVETTES

♦ 3 ex-U.S. Cohoes-class former net tenders

| | Bldr | L | In serv. |
|--|--------------------------|----------|----------|
| P 207 Cambiaso (ex-Etlah, AN 79) | Marietta Mfg., W. Va. | 16-12-44 | 16-4-45 |
| P 208 SEPARACIÓN (ex-Passaconaway, AN 86) | Marine Iron & Ry, Duluth | 30-6-44 | 27-4-45 |
| P 209 CALDERAS (ex-Passaic, AN 87) | Leatham B. Smith, Wisc. | 29-6-44 | 6-3-45 |

D: 650 tons (785 ft) **S**: 12.3 kts **Dim**: 51.36 (44.5 pp) \times 10.31 \times 3.3

A: 2/76.2-mm DP (I × 2) - 3/20-mm AA (I × 3)

Electron Equipt: Radar: 1/SPS-64 Fuel: 88 tons Man: 48 tot.

M: Diesel-electric: 2 Busch-Sulzer B5-539 diesels, 1 motor; 1 prop; 1,200 hp

Electric: 120 kw

Remarks: Recommissioned from the U.S. Maritime Commission's reserve fleet, where they had been laid up since 1963, and transferred 9-76. Despite low speed and general unsuitability, they are employed as patrol ships and tugs. Also used in general support, navigational tender, and hydrographic survey duties. P 207 and P 208 have had the net tender "horns" at the bow removed and a new, curved stem added; they also received a second 76.2-mm gun on the forecastle.

2 ex-U.S. Admirable-class former minesweepers
 Bldr: Associated SB, Seattle, Wash.

D: 600 tons (903 fl) **S:** 15 kts **Dim:** $54.24 \times 10.06 \times 4.4$ **A:** 1/76.2-mm DP — 2/40-mm AA (I \times 2) — 6/20-mm AA (I \times 6)

Electron Equipt: Radar: 1/SPS-69

M: 2 Cooper-Bessemer GSB-8 diesels; 2 props; 1,710 hp Electric: 240 kw

Fuel: 260 tons Range: 5,600/9 Man: 100 tot.

Remarks: Transferred in 1-66. BN 454 renamed 1976. All minesweeping equipment and ASW armament removed from both.

PATROL BOATS AND CRAFT

◆ 2 110-ft Commercial Cruiser class Bldr: Swiftships, Inc., Morgan City, Louisiana

GC 108 Canopus (In serv. 6-84) GC 109 Orion (In serv. 8-84)



Orion (GC 109)

Swiftships, 8-84

D: 93.5 tons (fl) S: 23 kts (20 sust.) Dim: 33.53 × 7.32 × 1.83

A: . . . Electron Equipt: Radar:. .

M: 3 G. M. 12V92 TI diesels; 3 props; 2,700 hp

Electric: . . . Range: 1,500/12 Man: . . .

Remarks: Aluminum construction.

Note: The proposed acquisition of three ex-U.S. Navy "Osprey"-class fast patrol boats, PTF 23, 24, and 26, did not take place, due to the condition of the craft.

♦ 1 ex-U.S. PGM 71 class Bldr: Peterson SB, Sturgeon Bay, Wisc.

GC 102 Betelgeuse (ex-PGM 77)

D: 130 tons (145.5 fl) S: 16 kts Dim: 30.8 (30.2 pp) × 6.4 × 1.85

A: 1/20-mm AA — 2/12.7-mm mg (I × 2)

M: 2 Caterpillar D-348TA diesels; 2 props; 1,450 hp Range: 1,000/12 Man: 20 tot.

Remarks: Transferred 14-1-66. One of many gunboats of this class transferred to smaller navies by the United States. Re-engined and armament reduced, 1980.

♦ 3 ex-U.S. Coast Guard Argo class

| | Bldr | L | In serv. |
|---------------------------------------|-----------------|----------|----------|
| P 204 Independencia | Bath Iron Wks., | 19-3-32 | 1-4-32 |
| (ex-Icarus, WPC 110) | Bath, Me. | | |
| P 205 LIBERTAD | Bath Iron Wks., | 9-11-31 | 1-12-31 |
| (ex-Rafael, Atoa, ex-Thetis, WPC 115) | | | |
| P 206 RESTAURACIÓN | John H. Mathis, | 16-12-32 | 3-2-33 |
| (ex-Galatea, WPC 108) | Camden, N.J. | | |

D: 235 tons (350 fl) S: 14 kts Dim: 50.29 (49.00 pp) × 7.70 × 3.05 max.

A: 1/76.2-mm DP — 1/40-mm AA — 1/20-mm AA M: 2 diesels; 2 props; 1,280 hp **Fuel**: 25 tons diesel

Range: 1,300/15 Man: 40 tot.

Remarks: Stricken from U.S. Coast Guard: P 204 on 21-10-46, P 205 on 1-7-47, and P 206 on 15-3-48, and sold to the Dominican Republic on 1-7-48. Re-engined during late 1960s-early 1970s.

♦ 1 former U.S. Army aircraft-rescue launch

GC 105 CAPITAN ALSINA (L: 1944)

D: 100 tons (fl) S: 17 kts Dim: 31.5 × 5.8 × 1.75 A: 2/20-mm AA (I × 2)
 M: 2 G.M. diesels; 2 props; 1,000 hp Man: 20 tot.

Remarks: Wooden hull. Used as Naval Academy training craft, refitted 1977.

4 U.S. 85-ft Commercial Cruiser-class patrol craft craft, Berwick, La. Bldr: Sewart Sea-

| In serv. | In serv. | In serv. | GC 104 ALDEBARÁN | 1972 | GC 106 BELLATRIX | 1967 | GC 103 PROCION | 1967 | GC 108 CAPELLA | 1968 |



Capella (GC 108)

L. & L. Van Ginderen, 3-84

D: 60 tons (fl) S: 21.7 kts Dim: 25.9 × 5.7 × 2.1 A: 3/12.7-mm mg (I × 3) M: 2 G.M. 16V71N diesels; 2 props; 1,400 hp Range: 800/20 Man: 9 tot.

In serv.

19-3-45

DOMINICAN REPUBLIC (continued) PATROL BOATS AND CRAFT (continued)

♦ 1 former U.S. 63-ft aircraft-rescue launch (In serv. 1953)

GC 101 RIGEL

D: 27 tons (fl) S: 18.5 kts Dim: 19.3 × 4.7 × 1.2 A: 2/12.7-mm mg M: 2 G.M. 6V71 diesels; 2 props; 800 hp Range: 450/15 Man: 9 tot.

Bldr: Dominican NY (In serv. 1975) • 4 small patrol craft

BA 3 CARITE BA 6 ATÓN BA 9 PICÚA BA 15 JUREL

D: 30 tons (fl) S: 12 kts Dim: 12.7 × 4.0 × 1.8 A: 1/76.2-mm mg M: 2 G.M. diesels; 200 hp

REMARKS: Have auxiliary sail power. Sisters Albacora and Bonito discarded.

AUXILIARY SHIPS

♦ 1 converted U.S. LSM 1-class cargo carrier Bldr: Brown Bros., Houston, Tex.

BDM 301 Sirio (ex-LSM 483)

Laid down 17-2-45

L In serv

10-3-45

D: 734 tons (1,100 fl) S: 12 kts Dim: 62.8 × 10.4 × 2.1 Man: 30 tot. M: 2 G.M. 16-278A diesels; 2,800 hp Electric: 240 kw Fuel: 164 tons

REMARKS: Transferred 3-58. Decked over, bow doors plated up, bridge re-sited on centerline, 1970.

♦ 1 utility landing craft

Bldr: Dominican NY (In serv. 1958)

LDM 302 SAMANA

D: 128 tons (310 fl) S: 8/7 kts Dim: 36.4 × 11.0 × 1.15 A: 1/12.7-mm mg M: 3 G.M. 64HN9 diesels; 3 props; 450 hp Fuel: 80 tons Man: 17 tot.

Remarks: U.S. LCT(5) design, used for logistics duties. Sister Enriquillo discarded 1979.

♦ 1 small buoy tender

BA 10 NEPTUNO (ex-Toro)

Bldr: J. H. Mathis, U.S.A., 1954

D: 72.2 tons (fl) S: 10 kts Dim: 19.5 × 5.7 × 2.4 M: 1 G.M. diesel; 225 hp Man: 7 tot.

♦ 1 former 110-ft U.S. Coast Guard buoy tender

Bldr

Laid down 18-10-09

In serv. 13-7-11

FB 1 CAPOTILLO (ex-Camelia, WAGL 206) Racine Boat Co.,

Muskegon, Mich.

D: 327 tons (377 fl) **S:** 10 kts **Dim:** $33.53 \times 7.32 \times 2.44$

M: 2 diesels; 2 props; 220 hp Range: 1,700/9; 2,100/7 Man: 23 tot.

REMARKS: Stricken from U.S. Coast Guard 18-8-47 and purchased 29-12-47 by the Dominican Republic. Re-engined and rehabilitated early 1970s.

♦ 2 small oilers Bldr: Ira S. Bushey, Brooklyn, N.Y.

BT 4 CAPITAN W. ARVELO

Laid down 3-2-45

L In serv. 21-6-45 8-11-45

(ex-U.S. YO 213)

Man: 25 tot.

BT 5 CAPITAN BEOTEGUI 23-4-45 30-8-45 17-12-45 (ex-U.S. YO 215)

D: 1.076 tons (fl) **S:** 8 kts **Dim:** $47.6 \times 9.3 \times 4.0$ **A:** 2/20-mm AA (I × 2) M: 1 Union diesel; 1 prop; 525 hp Cargo: 6,071 barrels fuel

Remarks: Both were loaned 4-64; lease extended 31-12-80. Smaller than standard U.S. YO-65-class yard oiler.

1 small survey ship, converted sport-fishing boat

BA 8 ATLANTIDA

S: . . . **Dim:** $12.1 \times 3.6 \times 1.8$ M: 2 G.M. 4-71 diesels; 2 props; 300 hp

♦ 1 U.S. Cherokee-class fleet tug

Bldr: Charleston SB & DD, S. Carolina

Laid down

In serv.

RM 21 Macorix (ex-Kiowa, ATF 72)

L 22-6-42 5-11-42 7-6-43

D: 1,235-tons (1,675 fl) **S:** 15 kts **Dim:** 62.48 (59.44 wl) \times 11.73 \times 4.67 A: 1/76.2-mm DP — 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/SPS-5D M: 4 G.M. 12-278 diesels, electric drive; 1 prop; 3,000 hp

Electric: 260 kw Fuel: 295 tons Man: 85 tot.

Remarks: Transferred 16-10-72; lease extended 31-12-80. Has what appear to be multiple mg mounts abreast after tripod mast.

2 U.S. Sotoyomo-class auxiliary ocean tugs

RM 18 CAONABO (ex-Sagamore, ATA 208)

(ex-Stallion, ATA 193)

RM 22 ENRIQUILLO

Bldr Gulfport Boiler, Port Arthur, Tex. Levingston SB, Orange, Tex.

Laid down L 19-1-45 27-11-44

26-10-44 24-11-44 1-2-45



Caonaba (RM 18)

1981

D: 534 tons (860 fl) S: 13 kts Dim: 43.59 × 10.31 × 3.96 A: 1/76-mm DP-2/20-mm AA (I×2) Electron Equipt: Radar: 1/nav. M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp Electric: 120 kw Fuel: 160 tons Range: 8,000/8 Man: 45 tot.

Remarks: RM 18 leased 1-2-72, extended 31-12-80. RM 22 purchased 30-10-80.

• 2 Hercules-class harbor tugs

Bldr: Dominican NY (In serv. 1960)

RP 12 HERCULES RP 13 GUACANAGARIX

D: 200 tons (fl) **S**: . . . kts **Dim**: $21.4 \times 4.8 \times 2.7$ M: 1 Caterpillar diesel; 1 prop; 500 hp Man: 8 tot.

1 former landing craft

RDM 303 Ocoa Bldr: U.S.A.

D: 50 tons (fl) S: 9 kts Dim: 17.1 × 4.3 × 1.2 M: 2 G.M. 6-71 diesels; 2 props; 450 hp Range: 130/9

Remarks: Modified as a tug about 1976. Retains bow ramp.

• 3 small harbor tugs

RP 20 Isabela RP 19 Calderas RP 22 Puerto hermoso -- no data

♦ 1 U.S. YTL 422-class small tug

Bldr: Robt. Jacob, City Isl., NY

RP 16 Bohechio (ex-Mercedes, ex-YTL 600) (In serv. 25-7-45)

D: 70 tons (80 fl) S: 10 kts Dim: 20.1 × 5.5 × 2.4

M: 1 Hoover-Owens-Rentschler diesel; 1 prop; 375 hp Fuel: 7 tons

Remarks: Transferred 1-71.

TRAINING CRAFT

♦ 1 sail-training ship for Naval Academy (In serv. 1979)

BA 7 NUBE DEL MAR (ex-Catuan)

D: 40 tons (fl) **S:** 12 kts **Dim:** 12.8 × 3.6 × . . . M: 1 Volvo Penta 21A diesel; 1 prop; 75 hp

♦ 1 training launch (In serv. . . .)

BA. . . DUARTE

D: 60 tons (fl) **S:** . . . kts **Dim:** $22.9 \times 5.7 \times 2.1$ M: 1 G.M. 6-71 diesel; 1 prop; 325 hp Man: 30 tot.

• 2 small fishing boats (In serv. 1979)

BA 11 ALTO VELO BA 12 SAONA

ECUADOR

Republic of Ecuador

Personnel (1984): 3,800 total

Merchant Marine (1984): 135 ships - 411,641 grt (tankers: 26 ships - 166,943)

NAVAL AVIATION: A small detachment with three French Alouette-III helicopters, three Israeli Arava light transports, two Cessna T-37, two T-41, one Cessna 320, one Cessna 177, three Beech T-34C-1 trainers and one Beech Super King Air light transport.

SUBMARINES

 2 German Type 209 (IK 79) Bldr: Howaldtswerke, Kiel

Laid down In serv. 6-10-76 S 11 SHRYI 5-8-74 6-11-77 S 12 HUANCAVILCA 20-1-75 15-3-77 16-3-78



Huancavilca (S 12)

P. Voss, 4-84

D: 1,285 tons surf./1,390 sub. S: 21.4 kts (1 hr.) Dim: 59.50 × 6.20 × 5.50

A: 8/533-mm TT (fwd.) — 14 torpedoes Fuel: 110 tons Electron Equipt: Radar: 1 Thomson-CSF Calypso

Sonar: 1/Atlas A526 passive, 1/CSUAN 407 A9 active, 1/DUUX-2

M: 4 MTU 12V493 TY60 diesels, 4 Siemens 405 kw generators, electric drive: 1 Siemens motor; 1 prop; 5,000 hp

Endurance: 45 days Range: 400/4 sub.; 8,400/8 snorkel

Man: 5 officers, 26 men

Remarks: Ordered 1974. Hollandse Signaal M8 torpedo f.c.s. S 12 commenced a refit at her builders, 4-84.

DESTROYER

♦ 1 U.S. Gearing FRAM-I class

Laid down Bldr In serv. DD 01 PRESIDENTE ELOY Consolidated Steel, 23-4-45 25-8-45 18-5-46 Orange, Tex. ALFARO (ex-Holder, DD 819)



Presidente Eloy Alfaro (DD 01) J. Jedrlinic, 1980

D: 2,425 tons (3,500 fl) S: 30 kts Dim: 119.1 × 12.4 × 5.8 A: 4/127-mm DP (II × 2) - 6/324-mm Mk 32 ASW TT (III × 2) - 1/helicopter Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40, 1/Mk 25 fire-control Sonar: SQS-23-EW: WLR-1

M: 2 sets GT; 2 props; 60,000 hp

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm2, 454°C Electric: 1,200 kw

Fuel: 650 tons Range: 2,400/25, 4,800/15 Man: 270 tot.

Remarks: Transferred by sale on 1-9-78, the Alfaro began overhaul in the U.S. 8-78;

arrived in Ecuador mid-1980. ASROC deleted. Mk 37 GFCS. Transfer of sister Southerland (DD 743) was canceled.

FRIGATE

♦ 1 U.S. Charles Lawrence-class fast transport

Bldr Laid down In serv. Phila. Navy Yd 22-2-43 DD 03 Moran Valverde 29-5-43 21-9-43 (ex-26 de Julio, ex-Enright, APD 66)



Moran Valverde (DD 03)

U.S. Navy, 1974

D: 1,400 tons (2,130 fl) S: 23 kts Dim: 93.27 × 11.27 × 4.7

A: 1/127-mm DP-6/40-mm AA (II × 3)-2 d.c. racks

Electron Equipt: Radar: 1/SPS-6, 1/navigational

M: G.E. turbo-electric drive; 2 props; 12,000 hp Electric: 680 kw Boilers: 2 Foster-Wheeler "D" Express; 30.6 kg/cm², 399°C Fuel: 350 tons

Range: 2,000/23; 5,000/15 Man: 212 tot.

Remarks: Transferred 7-67. Could carry 162 troops when in U.S. Navy. Davits can handle four LCPR/LCVP, but carries only two to reduce top weight. Has a raised helicopter deck over the stern area.

CORVETTES

6 Italian modified Wadi M'ragh class

| | Bldr | Laid down | L | In serv. |
|------------------|---------------|-----------|---------|----------|
| CM 11 ESMERALDAS | CNR, Muggiano | 27-9-79 | 5-10-80 | 7-8-82 |
| CM 12 Manabi | CNR, Ancona | 1-2-80 | 5-2-81 | 21-6-83 |
| CM 13 Los Rios | CNR, Muggiano | 1-9-79 | 28-2-81 | 1-10-83 |
| CM 14 EL ORO | CNR, Ancona | 1-3-80 | 5-2-81 | 10-12-83 |
| CM 15 GALAPAGOS | CNR, Muggiano | 20-10-80 | 5-7-81 | 26-5-84 |
| CM 16 Loja | CNR, Ancona | 6-2-81 | 27-2-82 | 26-5-84 |



Esmeraldas (CM 11)

CNR, 1982

D: 620 tons (700 fl) S: 37 kts Dim: 62.3 (57.8 pp) × 9.3 × 2.8

A: 6/MM 40 Exocet SSM (III × 2) - 1 Albatros SAM system (IV × 1; Aspide missiles) -1/76-mm OTO Melara DP-2/40-mm Breda AA (II × 1)-6/324-mm ILAS-3 ASW TT (III × 2)

Electron Equipt: Radar: 1/Decca TM1226, 1/RAN-10S, 1/Orion 10X, 1/Orion 20 X

Sonar: Diodon - EW: Gamma syst., 1/SCLAR chaff RL

M: 4 MTU 20V956 TB92 diesels; 4 props; 24,400 hp (20,400 sust.)

Electric: 750 kw Fuel: 126 tons Range: 1,200/31; 4,000/18 Man: 51 tot.

CORVETTES (continued)



Manabi (CM 12)

U.S. Navy, 1985



El Oro (CM 14)

U.S. Navy, 1985

Remarks: Ordered 1978 from CNR del Tirreno. More powerful engines than earlier units of class, helicopter platform added. Selenia IPN-10 data system, with NA 21 mod. 0 radar f.c.s. and two CO3 directors for guns and SAM system. Have a helicopter platform, but no aircraft have been acquired, and there is no hangar.

GUIDED-MISSILE PATROL BOATS

| ♦ 3 Quito class | Bldr: Lürssen, Vegesack, West Germany | | |
|-----------------|---------------------------------------|----------|--|
| | L | In serv. | |
| LM 31 Quito | 20-11-75 | 13-7-76 | |
| LM 32 GUAYAQUIL | 5-4-76 | 22-12-77 | |
| LM 33 CHENCA | 12-76 | 17-7-77 | |



Quito (LM 31)

G. Koop, 1976

D: 250 tons (265 fl) S: 35 kts Dim: $47.0\times7.0\times2.4$ A: 4/MM 38 Exocet SSM (II \times 2) - 1/76-mm OTO Melara - 2/35-mm AA (II \times 1)

Electron Equipt: Radar: 1/Decca TM1226, 1/Thomson-CSF Triton,
1/Thomson-CFS Pollux f.c.

Remarks: Carry 250 rounds of 76-mm and 1,100 rounds of 35-mm ammunition. Thomson-CSF Vega fire control system.

♦ 3 Manta class Bldr: Lürssen, Vegesack, W. Germany

LM 24 Manta (In serv. 11-6-71) LM 25 Tulcan (In serv. 2-4-71) LM 27 Nueva Rocafuerte (ex-Tena) (In serv. 23-6-71)



Manta (LM 24)

U.S. Navy, 1981

D: 119 tons (134 ff) S: 35 kts Dim: $36.2 \times 5.8 \times 1.7$ A: 4/Gabriel II SSM (I \times 4) — 2/30-mm AA Emerlec (II \times 1) Electron Equipt: Radar: 1/navigational, 1/Thomson-CSF Pollux M: 2 Mercedes-Benz diesels; 3 props; 9,000 hp Fuel: 21 tons Range: 700/30; 1,500/15 Man: 19 tot.

Remarks: Similar to Chilean *Guacolda* class, but faster. New guns added 1979; Gabriel missiles and Thomson-CSF Vega fire control system (without Triton search radar) replaced 2/533-mm TT 1980-81.

PATROL CRAFT

♦ 3 Port Director class Bldr: Halter, New Orleans, 1976

COMANDANCIA DE BALAO COMANDANCIA DE SALINAS COMANDANCIA DE GUAYAQUIL

D: 34 tons (fl) **S:** 25 kts **Dim:** 19.66 × 5.18 × 1.24 **A:** . . . **M:** 2 G.M. 12V71 TI diesels; 2 props; 960 hp

♦ 3 LPI class Bldr: F. Schürenstedt, Bardenfleth, W. Germany (In serv. 1954-55)

LC 81 Baba Hoyo (ex-10 de Agosto) LC 83 Portoviejo (ex-3 de Noviembre) LC 82 Pichincha (ex-9 de Octubre)

D: 45 tons (64 fl) S: 20 kts Dim: 23.4 × 4.6 × 1.8 A: 1 or 2 mg M: 2 Böhn & Kahler diesels; 2 props; 1,200 hp Range: 556/16 Man: 9 tot.

♦ 2 ex-U.S. Coast Guard utility boats—transferred 1971

UT 111 RIO NAPO UT 112 ISLA PUNA

D: 10.6 tons S: 19 kts Dim: 12.27 × 3.45 × 1.0 A: . . . M: 2 G.M. diesels; 2 props; 380 hp Range: 280/18 Man: 4-5 tot.

AMPHIBIOUS WARFARE SHIPS

♦ 1 ex-U.S. LST 542-class tank landing ship Bldr: Chicago Bridge & Iron

Laid down L In serv. 15-2-45 23-5-45 1-6-45

T 55 HUALCOPO (ex-Summit County, LST 1148)

> D: 1,650 tons (4,080 ft) S: 11.6 kts Dim: 100.04 × 15.24 × 4.3 A: 8/40-mm (II × 2, I × 4) M: 2 G.M. 12-567A diesels; 2 props; 1,700 hp

Electric: 300 kw Range: 7,200/10 Man: 119 tot.

Remarks: Bought 2-77. Used as transport; has ice-reinforced waterline.

♦ 1 ex-U.S. LSM 1-class medium landing ships Bldr: Charleston NY, S.C.

Laid down L In serv.

T 52 Tarqui (ex-LSM 555) 3-3-45 22-3-45 24-9-45

D: 513 tons (1,095 fl) **S:** 12.5 kts **Dim:** $62.0 \times 10.5 \times 2.2$ **A:** 2/40-mm AA (II \times 1) **M:** 2 G.M. 16-278A diesels; 2 props; 2,800 hp **Range:** 2,500/12 **Man:** 60 tot.

Remarks: Built 1945, transferred 11-58. Used as transports. Sister Jambeli (T 51, ex-LSM 539) stricken 1983.

♦ 6 "Sea Trucks" Bldr: Rotork, U.K. (In serv. 1979)

LF 91 LF 92 LF 93 LF 94 LF 95 LF 96

D: 5 tons (9 fl)
 S: 26 kts (light)
 Dim: 12.65 × 3.20 × . . .
 M: 2 Volvo AQD 40A diesels; 2 outdrive props; 240 hp
 Cargo: 4 tons

ECUADOR (continued)

AUXILIARY SHIPS

◆ 1 oceanographic research ship 21-10-81)

Bldr: Ishikawajima Harima, Tokyo (In serv.

HI 92 ORION (ex-Dometer)



Orion (HI 92)

Ishikawajima Harima, 1981

D: 1,105 grt S: 12.6 kts Dim: 70.17 (64.20 pp) × 10.70 × 3.6 (5.40 max.)
 Electron Equipt: Radar: 2/Decca 1226 Electric: 700 kw
 M: 3 G.M. 16V92 TI diesels, electric drive (2 motors); 1 prop; 950 hp
 Range: 6,000/12 Man: 6 officers, 25 men, 19 scientists

Remarks: Dometer was delivery name, changed to Orion on arrival for commissioning. Equipped to conduct physical and biological oceanography, geophysical research, and hydrographic surveys.

♦ 1 inshore oceanographic research craft

O 112 RIGEL Bldr: Halter Marine, New Orleans (In serv. 1975)

D: 50 tons Man: 10 tot.

♦ 1 ex-U.S. Army FS 381-class small cargo ship leans (In serv. 1944)

Bldr: Higgins, New Orleans (In serv. 1944)

T 12 CALICUCHIMA (ex-FS 525)

D: 650 tons (930 fl) **S:** 11.5 kts **Dim:** 54.86 (52.37 pp) × 9.75 × 3.05 **M:** 2 G.M. 6-278A diesels; 2 props; 1,000 hp **Fuel:** 100 tons **Range:** 4,000/11 **Man:** 30 tot.

Remarks: Used to supply the Galápagos Islands. Leased 8-4-63; purchased 30-8-78.

♦ 1 ex-U.S. small water tanker

T 41 ATALHUAPA (ex-YW 131) Bldr: Leatham D. Smith, Wisc. (In serv. 17-9-45)

D: 440 tons (1,390 fl) **S:** 7 kts **Dim:** $53.1 \times 9.8 \times 4.6$

M: 1 G.M. diesel; 1 prop; 640 hp Fuel: 25 tons Man: 20 tot.

Remarks: Transferred 2-5-63; purchased 1-12-77. Cargo: 930 tons water.

◆ 2 U.S. Abnaki- and Achomawi-class fleet tugs
DD, Charleston, S.C.

Bldr: Charleston SB &

| | Laid down | L | In serv. |
|--------------------------------------|-----------|---------|----------|
| R 101 CAYAMBE | 18-9-44 | 26-2-45 | 19-5-45 |
| (ex-Los Rios, ex-Cusabo, ex-ATF 155) | | | |
| R 105 Chimborazo | 24-4-43 | 20-8-43 | 21-2-44 |
| (ex-Chowanoc, ATF 100) | | | |



Cayambe - now new number

1966

D: 1,235 tons (1,675 fl) **S:** 16.5 kts **Dim:** 62.48 (59.44 wl) \times 11.73 \times 4.67 **A:** 1/76.2-mm DP — 2/40-mm AA (I \times 2) — 2/20-mm AA (I \times 2) **Electron Equipt:** Radar: 1/Decca 916

M: 4 G.M. 12-278A diesels, electric drive; 1 prop; 3,000 hp Electric: 400 kw Fuel: 376 tons Range: 16,000/8; 7,000/15 Man: 85 tot.

Remarks: R 105: A: 2/12.7-mm mg; M: 4 Busch-Sulzer B5-539 diesels; pipe vice stack. Cayambe leased 2-11-60, purchased 30-8-78. Chimborazo purchased 1-10-77.

♦ 1 medium harbor tug (In serv. 1952)

R 102 SANGAY (ex-Losa)

D: 295 tons (390 fl) S: 12 kts Dim: 32.6 × 7.9 × 4.25

M: 1 Fairbanks-Morse diesel; 1 prop; . . . hp

Remarks: Bought 1964.

♦ 1 former U.S. Army tug

Bldr: Equitable Bldg. (In serv. 1945)

R 103 COTOPAXI (ex-R. T. Ellis)

D: 150 tons **S:** 9 kts **Dim:** 25.0 × 6.62 × 2.9 **M:** Diesel; 1 prop; 650 hp REMARKS: Bought 1947.

♦ 2 small tugs

R. . . Tungurahua R 104 Antizana -- no data

♦ 1 sail-training bark Bldr: Ast. Celaya SY, Bilbao, Spain

L In serv. BE 01 Guayas 23-9-76 23-7-77

D: 934 grt S: 10.5 kts Dim: 76.2 × 10.6 × 4.2 M: 1 G.M. 12V-149 diesel; 1 prop; 700 hp

• 1 repair barge

BT 62 PUTAMAYO (ex-YR 340) Bldr: New York Navy Yard, 1944

D: 520 tons (770 fl) Dim: 45.7 × 10.4 × 1.8 Electric: 330 kw

Remarks: Transferred 7-62; purchased 1-12-77.

♦ 1 ex-U.S. auxiliary repair dock (In serv. 1944)

DF 121 Amazonas (ex-ARD 17)

Capacity: 3,500 tons Dim: $149.9 \times 24.7 \times 1.7$ (light)

Remarks: Transferred 7-1-61. Pointed bow. Length over blocks: 118.6 m; 18.0 clear width. Dry dock companion craft YFND 20 leased 2-11-61 to support.

COAST GUARD Established 1980

Personnel (1982): 13 officers, 257 enlisted men

◆ 14 U.S. Baycraft 40-ft. patrol craft (In serv. 1979-80)

Remarks: Fiberglass hulls; modified sport-fishing boat design. No other data available. The two U.S. PGM 71-class patrol boats *Veinticinco de Julio* (ex-Quito, ex-PGM 75) and *Diez de Agosto* (ex-Guayaquil, ex-PGM 76) were stricken in 1983.

EGYPT

Arab Republic of Egypt

Personnel (1985): Approx. 30,000 total

Merchant Marine (1984): 330 ships - 778,591 grt

(tankers: 41 ships—104.030 grt)

Naval. Aviation: The Navy operates 18 Westland Sea King Mk 47 helicopters and 12 Aerospatiale SA 342 L Gazelle helicopters; another 12 Gazelles are on order. The Sea Kings are to be fitted to guide Otomat anti-ship missiles, and the Gazelles can carry AS.12 wire-guided missiles.

Coast Defenses: The Navy is responsible for coastal defenses. Fifty Coast Defense, truck-mounted versions of the Otomat missile were purchased 1983. Targeting will be performed by land-based Sea King helicopters. Some Soviet Samlet coast-defense missiles remain in service also.

SUBMARINES

• 8 Soviet and Chinese Romeo class

4 Soviet-built: 834, 837, 840, 843

4 Chinese-built: 831, 842, 852, . .

D: 1,330/1,700 tons **S:** 15.2/13 kts **Dim:** $77.60 \times 6.70 \times 4.95$

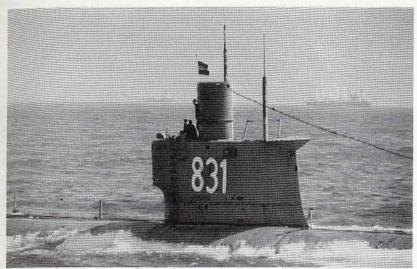
A: 8/533-mm TT (6 fwd, 2 aft) - 14 torpedoes or 28 mines

Electron Equipt: Radar: 1/Snoop Plate — Sonar: Hercules (Chinese units:

Tamir-5L active, Feniks)

M: Diesel-electric, 2 Type 37D diesels, 2,000 hp each; 2 props; 2,700 hp — 2/50-hp creep motors

SUBMARINES (continued)



Chinese-built Romeo 831

1984

Endurance: 60 days Range: 350/4 sub.; 14,000/9 surf.; 7,000/5 snorkel)
Man: 56 tot.

Remarks: The Soviet-built units were transferred — 5 in 1966, 1 in 1969, and began refitting with European equipment in 1981. They had been constructed between 1957 and 1960 at Baltic Shipyard, Leningrad; two Soviet-built units have been discarded. Two units, launched in 1980, were delivered from China on 28-3-83; delivered 10-83; the second Chinese pair were delivered 3-1-84 and commissioned 21-5-84. The Chinese-built units have sonar domes atop their bows and displace 1,319 tons surfaced/1,712 tons submerged. All have 224 battery cells, producing 6,000 amp/hr. Operating depth is 270 m (300 max.). The Soviet-built units are to be updated by Thyssen Nordseewerke, under a contract signed 1984.

• 3 Soviet Whiskey class

810 816 819



Egyptian Whiskey (old number)

L. & L. Van Ginderen, 1980

D: 1,050/1,350 tons **S:** 17/16 kts **Dim:** $75.0 \times 6.3 \times 4.8$ **A:** 6/533-mm TT (4 fwd, 2 aft) — 12 torpedoes or 28 mines

Electron Equipt: Radar: 1/Snoop Plate

Sonar: Hercules, passive array

M: 2 Type 37D diesels; 2,000 hp each; 2 electric motors; 2 props; 2,500 hp Endurance: 40-45 days Range: 6,000/5 (snorkel) Man: 50 tot.

Remarks: Survivors of six transferred from 6-57 to 8-62. Reported in poor condition. In refit 1978-79; were to get British electronic intercept equipment.

DESTROYER

♦ 1 British "Z" class

921 EL FATEH Wm. Denny, Dumbarton, 19-5-42 5-6-44 22-12-44 (ex-Zenith, ex-Wessex) Scotland



El Fateh (921)

L. & L. Van Ginderen, 5-85

D: 1,730 tons (2,575 fl) **S**: 31 kts **Dim**: $110.6 \times 10.9 \times 5.2$

A: 4/102-mm DP (I × 4) -6/40-mm AA (II × 1, I × 4) -8/533-mm TT -4/d.c. projectors

Electron Equipt: Radar: 1/Decca 916, 1/Marconi SNW-10, 1/Type 275 f.c.

M: 2 sets GT; 2 props; 40,000 hp Boilers: 2 Admiralty 3-drum

Fuel: 580 tons Range: 2,800/20 Man: 250 tot.

Remarks: Purchased 1955, refitted 1956 and again in 1964.

Note: Of the four Soviet-built Skoryy-class destroyers, Al Zaffer and Suez were discarded 1984, and 6 October and Damiet were to have been stricken by end-1985.

FRIGATES

♦ 2 Chinese Jianghu class Bld

Bldr: Jiangnan SY, Shanghai

951 Najim Al Zafir (In serv. 27-10-84)

952 EL NASSER (In serv. 16-4-85)



Najim al Zafir (951)

10-84



El Nasser (952) - shortly prior to delivery

R. Gillett, 9-84

D: 1,568 tons (1,900 fl) **S:** 25.5 kts **Dim:** $103.2 \times 10.2 \times 3.05$ (hull) **A:** 4/HY-2 Styx SSM (II \times 2) - 4/57-mm AA (II \times 2) - 12/37-mm AA (II \times 6) - 4/RBU-1200 ASW RL (V \times 4) - 4/BMB-2 d.c. mortars - 2/d.c. racks - mines

Electron Equipt: Radar: 1/Type 756, 1/Eye Shield, 1/Square Tie Sonar: MF, hull-mounted

EW: None-IFF: 2/Square Head, 1/High Pole A

M: 2 SEMT-Pielstick diesels; 2 props; 16,000 hp

Range: 1,750/25; 4,000/15 Endurance: 15 days Man: 195 tot.

Remarks: Ordered 1982. 951 completed 7-84, arriving in Egypt in 10-84. 952 completed 12-84, arriving in Egypt 3-85. There are plans to update the armament suits and sensors. Differ from Chinese Navy units in having twin 57-mm guns vice single or twin 100-mm mounts fore and aft, and in having an enclosed housing for the optical rangefinder atop the bridge. There is no radar fire-control equipment for the eight gunmounts, all of which are locally controlled via on-mount sights.

♦ 2 Spanish Descubierta class Bldr: Bazán, Cartagena

D: 1,363 tons (1,575 fl) S: 26 kts Dim: 88.88 (85.80 pp) \times 10.40 \times 3.70 A: 8/Harpoon SSM (IV \times 2) - 1/Mk 29 SAM launcher (VIII; 24 NATO Sea Sparrow missiles) - 1/76-mm OTO Melara Compact - 2/40-mm AA (I \times 2) - 1/375-mm Bofors ASW RL (II \times 1) - 6/324-mm Mk 32 ASW TT (III \times 2, Stingray torpedoes)

Electron Equipt: Radar: 1/HSA ZW-06/Z, 1/HSA DA-05/2, 1/HSA WM-25 f.c. Sonar: Raytheon 1160B hull-mounted, Raytheon 1167 VDS EW: Elettronica Beta intercept

M: 4 MTU-Bazán 16 MA656 TB91 diesels; 2 CP props; 18,000 hp Electric: 1,810 kw Fuel: 250 tons Range: 6,000/18

Man: 10 officers, 106 men (146 accom.)

FRIGATES (continued)



El Aboukir (941) - fitting out; note VDS position aft

L. & L. Van Ginderen, 10-84



El Aboukir (941) - fitting out

L. & L. Van Ginderen, 10-84

Remarks: Originally ordered 25-5-76 for the Spanish Navy, but sold 1982. 936 completed 28-2-84 and 941 on 6-9-84. Have fin stabilizers, plus U.S. "Prairie/Masker" bubble system to reduce sound radiation below the waterline. Carry 600 rds 76-mm ammunition. H.S.A. SEWACO weapons control system. The U.S. supplied the Harpoon missiles in 1984.

Note: British Black Swan-class frigate Tarik (ex-El Malek Farouk, ex-Whimbrel) and British Hunt I-class frigate Port Said (ex-Mohammed Ali el Kebit, ex-Cottesmore), are inoperable hulks used for accommodations at pierside.

GUIDED-MISSILE PATROL BOATS

Note: Still planned is the acquisition of a further six Western-designed guided-missile patrol boats. A repeat of the *Ramadan* class, Spain's Bazán "Cormoran" design, and a 61-m, 465-ton, 38-kt. PSSM-200 design from Tacoma Boatyard, Tacoma, Washington are leading contenders; the latter would have 8/Harpoon, a 76-mm OTO Melara compact, and a 30-mm gatling gun. Funds to order these ships are expected to become available in 1988.

♦ 6 Chinese Hoku class Bldr: . . . (In serv. 27-10-84)

401 402 403 404 405 406

D: 68 tons, 73.88 normal (79.19 fl) S: 38 kts

Dim: 27.0 × 6.30 × 1.8 (1.295 hull)

A: 2/HY-2 Styx SSM $(I \times 2) - 2/25$ -mm AA $(II \times 1)$

Electron Equipt: Radar: 1/Square Tie

M: 4 M50F-4 diesels; 4 props; 4,800 hp Electric: 65 kw

Endurance: 5 days Range: 520/26 Man: 17 tot.

Remarks: Delivered 9-84 and commissioned together the following month; did not have missiles aboard during public display. Steel construction.

♦ 6 Ramadan class Bldr: Vosper Thornycroft, Portchester, U.K.

| | Laid down | L | In serv. |
|------------------|-----------|----------|----------|
| 561 RAMADAN | 22-9-78 | 6-9-79 | 20-7-81 |
| 562 EL KADESSEYA | 23-2-79 | 31-1-80 | 15-9-81 |
| 563 KHYBER | 23-4-79 | 19-2-80 | 6-4-82 |
| 564 EL YARMOUK | 15-5-79 | 12-6-80 | 18-5-82 |
| 565 Badr | 29-9-79 | 17-6-81 | 17-6-82 |
| 566 HETTEIN | 29-2-80 | 25-11-80 | 28-10-82 |
| | | | |



El Kadesseya (562) - old number

L. & L. Van Ginderen, 6-82



El Yarmouk (561) - old number

L. & L. Van Ginderen, 6-82

D: 262 tons (312 fl) S: 35 kts Dim: 52.0 (48.0 pp) \times 7.6 \times 2.0 (hull) A: 4/Otomat SSM (II \times 2) — 1/76-mm OTO Melara Compact DP — 2/40-mm Breda AA (II \times 1)

Electron Equipt: Radar: Marconi: 1/S820, 1/S810, 2/ST802 EW: Decca-Racal Cutlass and MEL Matilda passive, Decca-Racal Cygnus jammer, Mel Protean chaff RL (VI × 2)

M: 4 MTU 20V538 TB91 diesels; 4 props; 16,000 hp Fuel: 43 tons Electric: 420 kw Range: 2,000/15 Man: 31 tot.

Remarks: Ordered 4-9-77. Have Marconi Sapphire fire control system with two ST 802 radar/t.v. directors, two Lawrence Scott optical directors. Ferranti CAAIS automated data system. First pair arrived Egypt 13-11-81, second 23-7-82, third in 12-82.

♦ 6 6 October class Bldr: Egypt/Vosper Thornycroft (In serv. 1980-81)
 783 785 787 789 790 791



6 October class (791) - Otomat racks empty

L. & L. Van Ginderen, 7-82

D: 71 tons (82 fl) S: 40 kts Dim: $25.3 \times 6.0 \times 1.8$ A: 2/Otomat SSM — 4/30-mm AA Type A32 (II \times 2) Electron Equipt: Radar: Marconi: 1/S810, 1/ST802

EW: MEL Matilda passive, MEL Protean chaff RL (VI \times 2)

M: 4 CRM 18V-12D/55 YE diesels; 4 props; 5,400 hp Range: 400/30

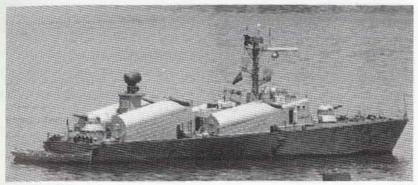
Man: 20 tot.

GUIDED-MISSILE PATROL BOATS (continued)

REMARKS: Wooden hulls, built at Alexandria DY, Egypt, 1969-75. Completed by Vosper Thornycroft at Portchester, Portsmouth 1979-81, with Italian-French missiles and British guns; diesels are Italian. Basic design is that of the Soviet Komar class. Uses Marconi Sapphire radar/t.v. fire control system. 791 was lost overboard during delivery 16-12-80, salvaged, returned to U.K. 30-6-81, and completed repairs 13-8-82.

♦ 7 ex-Soviet Osa-I class

633 635 637 639 641 643



Egyptian Osa-I

D: 175 tons (215 fl) S: 35 kts Dim: 38.6 × 7.6 × 1.8

A: 4/SS-N-2A Styx SSM (I × 4) - 1/SA-7 Grail position - 4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt, 1/Decca 916-

IFF: 2/Square Head, 1/High Pole A M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25

Remarks: Transferred 1966. Reported being refitted with 3 MTU diesels. All carry shoulder-launched SA-7 Grail (SA-N-5) SAMs, launched from a tub amidships. Passive warning equipment now fitted.

PATROL BOATS

• 8 Chinese Hainan class

| | | In serv. | | In serv. |
|------|-----------|----------|---|----------|
| | . Nour | 23-10-83 | N | 21-5-84 |
| 184 | . AL HADI | 23-10-83 | N | 6-84 |
| + | . N | 21-5-84 | N | 6-84 |
| 10.0 | . N | 21-5-84 | N | 6-84 |

D: 375 tons normal (400 fl) S: 30.5 kts Dim: 58.77 \times 7.20 \times 2.20 (hull) A: 4/57-mm AA (II \times 2) — 4/25-mm AA (II \times 2) — 4/RBU-1200 ASW RL

(V × 4) -2/BMB-2 d.c. mortars -2/d.c. racks - mines

Electron Equipt: Radar: 1/Pot Head Range: 2,000/14

M: 4 diesels; 4 props; 8,800 hp Man: 70 tot.

Remarks: First pair arrived 10-83, next three in 2-84, and final trio in 6-84. All were delivered aboard the Chinese float-on cargo ship Shamekou.

• 4 Chinese Shanghai-II class



Egyptian Navy Shanghai-II

1984

D: 122.5 tons normal (134.8 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55 A: 4/37-mm AA (II × 2) — 4/25-mm AA (II × 2)

Electron Equipt: Radar: 1/Pot Head

M: 2 M50F-4, 1,200-hp diesels; 2/12D6, 910 hp diesels; 4 props; 4,220 hp Electric: 39 kw Range: 750/16.5 Man: 36 tot. Endurance: 7 days

Remarks: Transferred 1984 with transfer numbers E 601-604. Do not have depth charges, as on Chinese Navy examples.

Note: The Hainans and the Shanghai IIs essentially replaced the 12 Soviet S.O.-1-class submarine chasers delivered 1962-63, although up to 6 may be retained in reserve

TORPEDO BOATS

• 6 Soviet Shershen class

310 321 332 343 354 365



Shershen 343 — with 122-mm rocket launchers, Grail tub abaft Drum Tilt

D: 150 tons (180 fl) S: 45 kts Dim: $34.0 \times 7.2 \times 1.5$ A: 4/30-mm AA (II × 2) — 4/533-mm TT (I × 4) or 2/122-mm RL (XX × 2)

Electron Equipt: 1/Square Tie, 1/Drum Tilt

M: 3 M503A diesels; 3 props; 12,000 hp

Remarks: Transferred 1967-68. Three are armed with two 20-tubed 122-mm artillery rocket launchers instead of torpedoes. Most carry shoulder-launched SA-7 Grail (SA-N-5) missiles as well. All P-6-class torpedo boats discarded by 1985.

MINE WARFARE SHIPS

♦ 0 (+2) Tripartite-class minehunters

Bldr: Van der Giessen do Noord, the

Netherlands

Remarks: Ordered 6-3-85; see Netherlands section for data.

4 ex-Soviet Yurka-class minesweepers

530 Assuan 533 Guizan 536 Qena 539 Suhag

D: 400 tons (460 fl) S: 16 kts Dim: 52.0 × 9.3 × 2.0

A: 4/30-mm AA (II × 2)-10 mines Electron Equipt: Radar: 1/Don-2

M: 2 diesels; 2 props; 4,000 hp Range: 2,000/14; 3,200/10

Remarks: Delivered new 1969. Do not have Drum Tilt radar fire-control system. Lowmagnetic alloy steel construction.

Note: The six T-43-class minesweepers have been retired, and at least one has been used as a missile target.

◆ 2 Soviet T-301-class minesweepers (In serv. circa 1950)

EL FAYOUD EL MANUFIEH

D: 145.8 tons (160 fl) S: 12.5 kts Dim: 38.0 × 5.1 × 1.6

A: 2/45-mm - 2/12.7-mm mg M: 3 6-cyl. diesels; 3 props; 1,440 hp

Fuel: 20 tons Range: 2,500/8

Remarks: Transferred 1962-63. No radars. Used in harbor service only.

AMPHIBIOUS WARFARE SHIPS

• 3 Soviet Polnocny A-class LSM Bldr: Polnocny SY, Gdansk, Poland

D: 770 tons (fl) S: 19 kts Dim: 73.0 × 8.6 × 2.0

A: 2/30-mm AA (II × 1) -2/140-mm artillery RL (XVIII × 2)

Electron Equipt: Radar: 1/Don-2, 1/Drum Tilt

M: 2 Type 40D diesels; 2 props; 4,000 hp

Range: 900/18; 1,500/14 Man: 40 tot.

REMARKS: Transferred 1974. Cargo: 3 tanks or 180 tons.

• 9 ex-Soviet Vydra-class LCUs



Egyptian Vydra with rocket launchers

1976

D: 425 tons (600 fl) S: 11 kts Dim: 54.9 × 7.6 × 2.0 A: 4/40-mm AA (II × 2) -8/15-tubed artillery RL-see remarks

AMPHIBIOUS WARFARE SHIPS (continued)

Electron Equipt: Radar: 1/Spin Trough removed M: 2 diesels; 2 props; 800 hp Range: 2,700/10 Man: 20, plus 200 troops

Remarks: Transferred 1967-69. Armament now removed. Some had 37-mm AA vice 40-mm. Cargo: 200 tons.

♦ 5 ex-Soviet SMB-I-class LCUs

D: 180 tons (335 fl) S: 10 kts Dim: 48.2 × 6.5 × 2.0 Electron Equipt: Radar: none M: 2 diesels; 2 props; 600 hp Range: 400/8 Man: 16 tot.

Remarks: Transferred 1965. Cargo: 180 tons.

♦ 8 U.S. "Seafox"-class swimmer delivery craft Bldr: Uniflite, Bellingham, Wash.

D: 11.3 tons (fl) **S:** 30 + kts **Dim:** $11.0 \times 3.0 \times 0.84$ A: Small arms Electron Equipt: Radar: 1/LN-66 M: 2 G.M. 6V92 TA diesels; 2 props; 900 hp Man: 3 tot.

Remarks: Ordered 1982. Glass-reinforced plastic construction.

♦ 10 to 12 small landing craft of various origins

AUXILIARY SHIPS

♦ 8 Soviet Toplivo-2-class coastal tankers Bldr: Alexandria SY, Egypt

D: 466 tons (1,180 fl) **S:** 10 kts **Dim:** $54.26 (49.40 \text{ pp}) \times 9.40 \times 3.10 (3.40 \text{ max.})$ Electron Equipt: Radar: 1/Spin Trough M: 1 Russkiy Dizel 6 DR 30/50-5-2 diesel; 1 prop; 600 hp Electric: 250 kw

Fuel: 19 tons Range: 1,500/10 Man: . . . tot.

Remarks: 308 grt/508 dwt. Part of a series of 26 ordered in Egypt for the U.S.S.R. prior to that country's expulsion. Cargo: 606m3 (500 tons diesel oil).

4 Soviet Okhtenskiy-class tugs

AL ISKANDARANI EL MAKS EL AGAMI EL DIKHILA

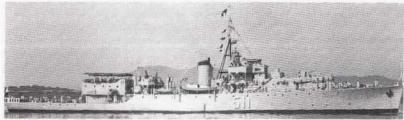
D: 700 tons (950 fl) S: 13.3 kts Dim: 47.3 × 10.3 × 5.5 Electron Equipt: Radar: 1/Don-2 or Spin Trough

M: 2 diesels, electric drive; 1 prop; 1,500 hp Range: 7,800/7 Man: 40 tot.

Remarks: Two transferred 1966; two assembled in Egypt.

♦ 1 British "River"-class former frigate

Bldr Laid down L In serv. 511 Rachid (ex-Spey) Smith's Dock Co., Ltd. 7-41 18-21-41 3-42



Rachid (511)

1978

D: 1,460 tons (2,175 fl) S: 19 kts Dim: 91.85 × 11.17 × 4.34 (fl) A: 1/102-mm - 4/40-mm AA (II × 2) - 1/SA-N-5 Grail SAM system M: Triple-expansion; 2 props; 5,500 hp Boilers: 2 Fuel: 640 tons Range: 7,700/12; 5,000/16 Man: 110 tot.

Remarks: Bought in 12-49. Used as a submarine tender.

◆ 2 Soviet Nyryat-I-class diving tenders

D: 120 tons (fl) S: 12 kts Dim: 29.0 × 5.0 × 1.7 Electron Equipt: Radar: 1/Spin Trough M: 1 diesel; 1 prop; 450 hp Range: 1,600/10 Man: 15 tot.

REMARKS: Transferred 1964

♦ 2 Soviet Poluchat-I-class torpedo retrievers

D: 80 tons (90 fl) S: 18 kts Dim: 29.6 × 5.8 × 1.5 Electron Equipt: Radar: 1/Spin Trough M: 2 M50 diesels; 2 props; 2,400 hp Range: 450/17; 900/10 Man: 20 tot.

♦ 2 Soviet PO-2-class general-purpose launches

D: 50 tons (fl) S: 9 kts Dim: 21.0 × . . . × . . . M: 1 diesel; 1 prop; 150 hp

1 Soviet Sekstan-class degaussing tender

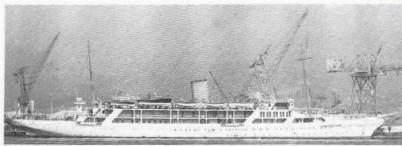
D: 408 tons (fl) S: 10.5 kts Dim: 41.0 × 9.3 × 4.2 M: 1 diesel; 1 prop; 400 hp Range: 1,200/10

Remarks: Wooden construction.

TRAINING SHIPS

 1 former yacht Bldr: Samuda, Scotland (In serv. 1865)

EL HORRIA (ex-Mahroussa)



El Horria

G. Garier, 1976

D: 4,561 tons (fl) **S:** 16 kts **Dim:** 145.6 (121.9 pp) \times 13.0 \times 5.3 A: Several mg M: 3 sets GT; 3 props; 5,500 hp

Remarks: World's oldest active naval ship; carried President Sadat in naval review, 12-80. Used as a training ship.

1 navigational training ship for the Naval Academy

EL KOUSSER D: 1,000 tons

1 former yacht, attached to the Naval Academy

INTISAR D: 500 tons

COAST GUARD

The Coast Guard is a branch of the naval service in Egypt

PATROL BOATS

♦ 3 (+6) U.S. Commercial Cruiser design Bldr: (1st 3) Swiftships, Inc., Morgan City, La.; others: . . . SY, Egypt. (In serv.: first 3: 16-4-85, others: 1986) 335 - 343



Egyptian Coast Guard patrol boats

Swiftships, 1985

D: 102 tons (fl) S: 27 kts Dim: 28.30 × 5.66 × 1.60

Electron Equipt: Radar: . . .

M: 2 MTU 12V331 TC92 diesels; 2 props; 2,660 hp

Range: 1,000/12 Fuel: 11.7 tons Man: 2 officers, 12 men

Remarks: Ordered 11-83. First 3 built in U.S., remainder assembled in Egypt from U.S.-supplied components. Aluminum construction.

• 0 (+6) Timsah-II class Bldr: Timsah SY, Ismailia (In serv. . . .)

D: 99 tons S: 24 kts Dim: 29.0 × 5.2 × 1.48 A: 2/20-mm Oerlikon GAM-BO1 AA (I × 2) Electron Equipt: Radar: . .

M: 2 MTU 12V331 TC92 diesels; 2 props; 2,660 hp

Range: 600/. . . Fuel: 10 tons Man: 13 tot.

Remarks: Revised version of Timsah class, with different engines, waterline exhausts vice stack. Ordered 1-85.

• 12 Timsah class

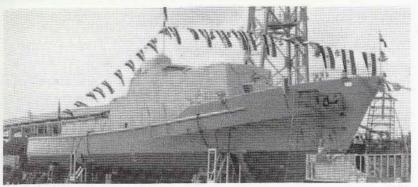
Bldr: Timsah SY, Alexandria (In serv. 1981-84, 1986-) D: 100 tons (fl) S: 25 kts Dim: 29.0 × 5.2 × 1.48

A: 2/30-mm Oerlikon A 32 AA (II × 1) — 1/20-mm AA

M: 2 MTU 8V331 diesels; 2 props; 2,960 hp Fuel: 10 tons Range: 600/. . . Man: 13 tot.

Remarks: Based on Nisr-class design. First unit laid down 1-1-80, launched 11-81, delivered 12-81.

EGYPT (continued) PATROL BOATS (continued)



Timsah-class unit at launch

1983

♦ 3 Nisr class

Bldr: de Castro BY, Port Said (In serv. 1963)

NIMR NISR THAR

D: 110 tons (fl) **S:** . . . **Dim:** $31.0 \times 5.2 \times 1.5$ **A:** 1/20-mm AA

M: 2 Maybach diesels; 2 props; . . . hp

PATROL CRAFT

Bldr: Canal Naval Const., Port Fuad, Egypt • 4 small patrol craft

D: 10 tons S: . . . Dim: . . . × M: 1 Thornycroft diesel

Remarks: Ordered 12-12-83. No further data available.

♦ 6 MV70 class

Bldr: Crestitalia, Ameglia (La Spezia), Italy

D: 33 tons (41.5 fl) **S:** 34 kts **Dim:** $21.0 \times 5.2 \times 0.9$

A: 2/30-mm Oerlikon A32 (II × 1) - 1/20-mm AA - 2/12.7-mm mg

M: 2 MTU 12V331 TC92 diesels; 2 props; 2,800 hp Range: 500/3

REMARKS: Fiberglass hulls.

♦ 30 DC-35 class

Bldr: Dawncraft, Wroxham, U.K. (In serv. 1977)

D: 4 tons (fl) **S:** 25 kts **Dim:** $10.7 \times 3.5 \times 0.8$

M: 2 Perkins T6-354 diesels; 2 props; 390 hp Man: 4 tot.

Remarks: Fiberglass hulled. For harbor police duties.

♦ 20 28-ft. "Enforcer" class

Bldr: Bertram Yacht, Miami, Fla. (In serv. 1973)

D: 8 tons (fl) S: 24 kts Dim: 8.5 × . . . × . .

A: 2/12.7-mm mg (I × 2) M: 2 diesels; 2 props; 300 hp

Remarks: Formerly naval, had 4/122-mm RL on sides of hull. Fiberglass construction.

Note: The Customs Service received twelve 19.8-m Sea Spectre-class patrol craft in

EL SALVADOR

Republic of El Salvador

Personnel: 130 officers and men plus 500-man Marine battalion

Merchant Marine (1984): 11 ships — 3,501 grt

PATROL CRAFT

1 U.S. 77-ft Commercial Cruiser Bldr: Swiftships, Inc., Morgan City, La. (In serv. 6-85)

D: 48 tons (fl) **S:** 26 kts **Dim:** $23.47 \times 6.10 \times 1.52$

A: 1/25-mm U.S. Mk 88 - 2/12.7-mm mg (I \times 2)

Electron Equipt: Radar: . . . Range: .

M: 3 G.M. 12V71 TI diesels; 3 props; 1,200 hp

Remarks: Aluminum construction. See photo in addenda.

Bldr: Camcraft, Crown Pt., Louisiana 3 aluminum-hulled

GC 6 (In serv. 10-75) GC 7 (In serv. 12-75) GC 8 (In serv. 11-75)

D: 100 tons (fl) **S:** 25 kts **Dim:** $30.5 \times 6.4 \times 1.5$ **A:** 3/12.7-mm mg (I \times 3) M: 3 G.M. 12V71 TI diesels; 3 props; 1,200 hp Range: 780/24 Man: 10 tot.

♦ 1 U.S. 65-ft Commercial Cruiser class Louisiana (In serv. 9-67)

Bldr: Sewart Seacraft, Berwick,

D: 33 tons (fl) **S**: 25 kts **Dim**: $19.8 \times 4.9 \times 1.5$ **A**: 3/12.7-mm mg (I \times 3) M: 3 G.M. 8V71 diesels; 3 props; 1,590 hp

Remarks: Overhauled, redelivered 1-2-85 by builder.

♦ 25 small launches with outboard motors

EQUATORIAL GUINEA

Republic of Equatorial Guinea

Personnel: (1985): approx. 60 tot.

MERCHANT MARINE (1984): 2 ships - 6,412 grt

◆ 4 patrol boats—ordered 9-82 from Ast. Celayo, Bilbao, Spain; no data available.

♦ 2 small patrol craft

Note: The Soviet P-6-class torpedo boat and Poluchat-I-class patrol boat formerly listed were out of service by 1985.

ETHIOPIA

Personnel: 1,500 men including 250 officers

Merchant Marine (1984): 21 ships - 30,008 grt (tankers: 2 ships - 3,368 grt)

NAVAL AVIATION: Still in service may be 4 DHC Otter and 3 DHC Twin Otter light transports, and 6 UH-1 Huey helicopters.

FRIGATES

♦ 2 Soviet Petya-II class

F 1616 (In serv. 20-7-83) F 1617 (In serv. 20-3-84)

D: 950 tons light, 1,020 tons std. (1160 fl) S: 29 kts (16 on diesel)

Dim: 81.8 (78.00 pp) \times 9.20 \times 2.97

A: 4/76.2-mm DP (II × 2) — 2/RBU-6000 ASWRL (XII × 2) — 10/400-mm

ASW TT (V × 2) - 2/d.c. racks - mines

Electron Equipt: Radar: 1/Don-2, 1/Strat Curve, 1/Hawk Screech

Sonar: 1/HF hull-mounted

EW: 2/Watch Dog intercept - IFF: High Pole B

M: CODAG: 2/15,000-hp gas turbines, 1 Type 61-V3, 6,000-hp diesel; 3 props

(CP on centerline); 36,000 hp - 2 active rudders; 100 hp

Range: 450/29; 1,800/16 (diesel); 4,800/10 Man: 8 off., 84 crew

Remarks: In service dates above are those of arrival at Massawa. Believed to be standard Petya-IIs, i.e., not "export model" with 3/533-mm TT and 4/RBU-2500. Hawk Screech gunfire control radar has two associated target designators on the open

GUIDED-MISSILE PATROL BOATS

4 Soviet Osa-II class

FMB 160 FMB 161 FMB 162 FMB 163

D: 210 tons (240 fl) S: 35 kts Dim: 38.6 × 7.6 × 2.0

A: 4/SS-N-2B Styx SSM-4/30-mm AA (II \times 2)

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt

IFF; 2/Square Head, 1/High Pole B

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: First unit transferred 1978, second 10-80, third 13-1-81, the fourth in 1982.

TORPEDO BOATS

♦ 2 Soviet MOL class

FTB 110 FTB 111

D: 175 tons (220 fl) S: 36 kts Dim: 38.6 × 7.6 × 1.9

A: 4/533-mm TT $(I \times 4) - 4/30$ -mm AA $(II \times 2)$

Electron Equipt: Radar: 1/Pot Head, 1/Drum Tilt

IFF: 1/Square Head, 1/High Pole B M: 3 M503A diesels; 3 props; 12,000 hp Man: 30 tot.

Remarks: Transferred 1978.

ETHIOPIA (continued)

PATROL BOATS

♦ 2 Soviet Zhuk class—transferred 10-82

PC 16 PC 17

D: 48 tons (60 fl) S: 34 kts Dim: $24.0 \times 5.0 \times 1.8 \text{ (props)}$ A: 4/14.5 -mm (II \times 2) Electron Equipt: Radar: 1/Spin Trough M: 2 M50F-4 diesels; 2 props; 2,400 hp

• 3 aluminum-hulled boats

Bldr: Swiftships, Morgan City, Louisiana

P 201 P 203 P 204



P 203 - with 23-mm AA

1978

D: 118 tons (fl) S: 32 kts Dim: 31.73 × 7.1 × 2.16

A: 4/30-mm Emerlec AA (II × 2) Electron Equipt: Radar: Decca RM 916

M: 2 MTU MB 16V538 TB90 diesels; 2 props; 7,000 hp

Range: 1,200/18 Man: 21 tot.

Remarks: Ordered 1976, delivered 4-77; two additional units were canceled by the U.S. arms embargo. P 203 and P 204 have four 23-mm AA (II \times 2) and two 12.7-mm machine guns (II \times 1). P 202 lost 1984.

 1 ex-U.S. Coast Guard Cape design Wisc. (In serv. 5-62) Bldr: Peterson Bldrs, Sturgeon Bay,

PC 15 (ex-U.S. PGM 58)



PC 14 (since discarded)

D: 80 tons (105 fl) S: 18 kts Dim: 28.95 × 6.1 × 1.55

A: 1/40-mm AA - 1/20-mm AA

M: 4 Cummins VT-12M700 diesels; 2 props; 2,200 hp Electric: 40 kw

Fuel: 12 tons Range: 460/20; 1,500/10 Man: 15 tot.

REMARKS: PC 11 lost in action, 4-77. PC 12-14 discarded 1984.

♦ 1 ex-Dutch Wildervank-class former minesweeper

MS 41 (ex-M 829 Elst)

D: 373 tons (417 fl) **S:** 14 kts **Dim:** $46.62 \times 8.75 \times 2.28$

A: 2/40-mm AA (I×2) Electron Equipt: Radar: 1/ZW-04

M: 2 Werkspoor diesels; 2 props; 2,500 hp Range: 2,500/10 Man: 40 tot.

Remarks: Launched 21-3-56; bought in 1970. All minesweeping gear removed. Wooden construction.

PATROL CRAFT

4 aluminum-hulled craft Bldr: Sewart Seacraft, Berwick, La. (In serv. 1965-67)

GB 21 GB 22 GB 23 GB 24 (ex-John, Caroline, Patrick, Jacqueline)

D: 15 tons (fl) S: 20 kts Dim: 13.1 × 3.9 × 0.9 A: 2/12.7-mm mg
M: 2 G.M. 6-71 diesels; 2 props; 500 hp Man: 7 tot.

AMPHIBIOUS SHIPS

♦ 2 Soviet Polnocny-B class Bldr: Polnocny SY, Gdansk, Poland

LTC 1037 LTC 1038

D: 800 tons (fl) S: 19 kts Dim: 74.0 × 8.6 × 2.0

A: 4.30-mm AA — 2/140-mm RL (XVIII × 2)

Electron Equipt: Radar: 1/Spin Trough, 1/ Drum Tilt IFF: 1/Square Head, 1/High Pole

M: 2 diesels; 2 props; 4,000 hp Range: 900/18; 1,500/14 Man: 40 tot.

REMARKS: Transferred 11-81 and 1-83. Cargo: 180 tons.

• 2 French EDIC-class LCU

Bldr: SFCN, Villeneuve la Garonne (L: 5-77)

LTC 1035 LTC 1036

D: 250 tons (670 fl) S: 8 kts Dim: $59.0 \times 11.95 \times 1.3$ A: 2/20-mm AA (I × 2) M: 2 MGO diesels; 2 props; 1,000 hp

Range: 1,800/8 Man: 1 officer, 15 men

Remarks: Cargo: 11 trucks or 5 light armored vehicles.

• 6 Soviet T-4 class landing craft

D: 70 tons (fl) S: 10 kts Dim: 19.0 × 4.3 × 1.0

M: 2 diesels; 2 props; 600 hp Man: 5 tot.

Remarks: Four transferred 1977-78, two in 1984.

TRAINING SHIP

(ex-Orca, AVP 49)

А 01 Етніоріа

• 1 U.S. Barnegat-class former seaplane tender

 Bldr
 Laid down
 L
 In serv.

 Lake Washington SY
 13-7-42
 4-10-42
 23-1-44

D: 1,766 tons (2,800 fl) **S:** 17 kts **Dim:** 94.7 (91.5 pp) \times 12.52 \times 3.65

A: 1/127-mm DP — 5/40-mm AA (II × 2, I × 1)

Electron Equipt: Radar: 1/SPS-12, 1/navigational, 1/Mk 26 M: 4 Fairbanks-Morse 38D8 ½ × 10 diesels; 2 props; 6,000 hp Electric: 600 kw Range: 15,000/12 Man: 215 tot.

REMARKS: Transferred in 1-62. Had Mk 52 radar GFCS for 127-mm gun.

Note: Also in service are a tug, AO 2, and a small service launch, TR 74.

FIJI Dominion of Fiji

Personnel (1984): 145 men (26 officers)

Merchant Marine (1984): 56 ships - 29,216 grt (6 tankers - 4,933 grt)

PATROL BOATS

♦ 0 (+6) patrol boats Bldr: Government Yard, Suva

D: . . . **S**: 18 kts **Dim**: 33.0 × . . . × . . .

A:

• 0 (+4) Australia . . . class

♦ 3 ex-U.S. Redwing-class minesweepers ington

Bldr: Bellingham SY, Wash-

204 Kikau (ex-Woodpecker, MSC 209) 3-2-56 205 Kula (ex-Vireo, MSC 205) 7-6-55 206 Kiro (ex-Warbler, MSC 206) 23-7-55



Kula (205) - with Bell 222 helicopter

9-84

D: 370 tons (fl) S: 13 kts Dim: 43.9 × 8.5 × 2.6

A: 1/20-mm AA — 2/12.7-mm mg

M: 2 G.M. 8-268A diesels; 2 props; 880 hp Range: 2,500/10 Man: 39 tot.

Remarks: The first two were transferred 10-75, the third 6-76. All minesweeping gear removed. Kula has a small flight deck built over the fantail for one Bell 222 helicopter.

Note: Auxiliaries Ruve and Latui are described in the addenda.

FINLAND

Republic of Finland

The naval force, limited by the Treaty of Paris to 10,000 tons and 4,500 men, is a separate establishment under the orders of the chief of the armed forces. Submarines and torpedo boats are excluded from the fleet, and there is no naval aviation. A Fokker F-27 MK 400M Maritime Patrol aircraft was delivered to the Air Force 31-1-84.

Personnel (1985): about 2,500, including 200 officers and 600 Frontier Guards
Merchant Marine (1984): 332 ships—2,168,471 grt (tankers: 42 ships—997,130 grt)

WEAPONS

The *Turunmaa*-class corvettes and the minelayer *Pohjanmaa* have a single-barrel automatic Bofors 120-mm gun with the following characteristics:

weight without munitions: 28.5 tons length: 46 calibers muzzle velocity: 800 m/sec training speed: 40°/sec elevation speed: 30°/sec arc of elevation: -10° to +80 maximum rate of fire: 80 rounds/min projectile weight: 35 kg maximum effective range, surface fire: 12,000 m

The other major weapons employed are Soviet SS-N-2 Styx missiles, Bofors 40-mm L70 AA guns, Soviet twin 30-mm AA guns, and 23-mm AA in twin mountings. Swedish RBS-15 anti-ship missiles were ordered in 1983 to equip the *Helsinki* class.

CORVETTES

• 2 Turunmaa class

| | Bldr | Laid down | L | In serv. |
|-------------|--------------------|-----------|---------|----------|
| 03 TURUNMAA | Wärtsilä, Helsinki | 3-67 | 11-7-67 | 29-8-68 |
| 04 Karjala | Wärtsilä, Helsinki | 3-67 | 16-8-67 | 21-10-68 |



Karjala (04)

Finnish Navy, 1984

D: 605 tons (770 fl) **S:** 35 kts **Dim:** $74.1 \times 7.8 \times 2.83$

A: 1/120-mm Bofors DP — 2/40-mm AA (I × 2) — 2/12.7-mm mg (I × 2) — 2/RBU-1200 ASW RL (V × 2) — 2/d.c. racks

Electron Equipt: Radar: 1/H.S.A. M22, 1/navigational

M: CODOG propulsion: 1 Bristol-Siddeley Olympus TM3B, 22,000-hp gas turbine; 3 Mercedes-Benz 1,100-hp diesels; 3 CP props

Electric: 880 kVA Fuel: 120 tons Range: 2,500/14 Man: 70 tot.

Remarks: Flush-deck hull, closed bridge, sharp profile. Cruises on the diesels (3 × 1,100 hp) at 17 knots. Ka-Me-Wa controllable-pitch propellers. Have Vosper fin stabilizers. Soviet ASW rocket launchers are behind doors in main-deck superstructure, abreast the mast; the d.c. racks are internal, at the stern. Six 103-mm flare Rl rails on 120-mm mount. 9LV 200 t.v./IR director added on mast, 1978. Both in refit 1984-85; to recevied Data Saab EOS-400 optronic f.c.s.

GUIDED-MISSILE PATROL BOATS

| ♦ 1 (+3+6) He | lsinki (PB 80 |) class | Bldr: Wärtsilä, Helsinki |
|---------------|---------------|---------|--------------------------|
| | Laid down | L | In serv. (scheduled) |
| 60 Helsinki | 3-9-80 | 5-11-80 | 1-9-81 |
| 61 Turku | 1-84 | 1985 | 1-10-85 |
| 62 N | | | 1-10-85 |
| 63 N | 14 47147 | W 4 14 | 1-6-86 |

D: 250 tons (280 fl) **S:** 30 kts **Dim:** $45.0 \times 8.9 \times 3.0$ (props)

A: 4/RBS-15 SSM (II × 2) — 1/57-mm Bofors Mk 1 DP — 4/23-mm AA (II × 2)

Electron Equipt: Radar: 1/navigational, 1/9GA208, 1/9L V225 f.c.

Sonar: Simrad SS 304 M: 3 MTU 16V538 TB92 diesels; 3 props; 12,000 hp

Range: . . . Man: 30 tot.

Remarks: Prototype ordered 5-10-78. Three additional ordered 13-1-83; six more planned. Aluminum hull. Helsinki has only one twin 23-mm AA mount.



Helsinki (60) - on trials

Finnish Navy, 1983

♦ 4 Soviet Osa-II class

11 Tuima 12 Tuisku 14 Tuuli 15 Tyrsky



Tyrsky (15)

Finnish Navy, 1984

D: 210 tons (240 fl) S: 35 kts Dim: 38.6 × 7.6 × 2.0

A: 4/SS-N-2B Styx - 4/30-mm AA (II × 2)

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt, 1/navigational

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25

Man: 30 tot.

Remarks: Transferred in 1975. Some Western electronic equipment has been added, including a navigational radar. Engines reported to be unreliable.

♦ Sea-sled hull type Bldr: Reposaaren Konepaja, Pori

Laid down L In serv. 16 Isku 11-68 4-12-69 1970



Isku (16)

1979

D: 115 tons (140 fl) S: 15 kts Dim: 26.35 × 8.70 × 2.00

A: 4/SS-N-2A Styx (I × 4) - 2/30-mm AA (II × 1)

Electron Equipt: Radar: 1/navigational, 1/Square Tie

M: 4 Soviet M50-series diesels; 4 props; 4,800 hp Man: 25 tot.

Remarks: Barge-like hull, designed for more powerful propulsion plant. Used primarily for training.

PATROL BOATS

♦ 1 prototype

Bldr: Fiskar's Turan, Veneveistamo SY/Laivateollisuus

33 Hurja

D: 54 tons (60 fl) S: 42 kts Dim: $21.7 \times 5.0 \times ...$ A: ... M: Diesels; waterjets; ... hp

Remarks: Glass-reinforced plastic prototype hull delivered 1-7-80 to Laivateollisuus for fitting out. This class was intended to replace at least seven of the Nuoli class during the 1980s, but no further orders have materialized.

PATROL BOATS (continued)

Bldr: Laivateollisuus, Turku (In serv. 1961-66) • 6 Nuoli class

| | In serv. | | In serv. |
|-------------|----------|-------------|----------|
| 35 Nuoli 5 | 6-7-62 | 41 Nuoli 11 | 5-5-64 |
| 38 Nuoli 8 | 10-10-62 | 42 Nuoli 12 | 30-11-64 |
| 40 Nuoli 10 | 5-5-64 | 43 Nuoli 13 | 12-10-66 |



Nuoli 5 (35)

Finnish Navy, 1983

D: 40 tons (64 fl) S: 40 kts Dim: 22.0 × 6.65 × 1.5

A: 1/40-mm AA — 1/20-mm AA Electron Equipt: Radar: Decca 707

M: 3 Soviet M50 diesels; 3,600 hp Man: 15 tot.

Remarks: Nuoli 10-13 have a lower superstructure. Sisters Nuoli-1-3, 6, and 9 discarded by 1984; survivors to be modernized.

| Ruissalo class Bidr: Laivateollisuus, Turk | 3 Ruissalo class | dr: Laivateollisuus, | Turku |
|--|--------------------------------------|----------------------|-------|
|--|--------------------------------------|----------------------|-------|

| | L | In serv. |
|-------------|---------|----------|
| 53 Ruissalo | 16-6-59 | 11-8-59 |
| 54 Raisio | 2-7-59 | 12-9-59 |
| 55 RÖYTTA | 2-6-59 | 14-10-59 |

• 2 Rihtniemi class Bldr: Rauma-Repola, Rauma

21-2-57 51 RIHTNIEMI 1956 52 RYMATTLYA 1956 20-5-57



Ruissalo (53)

Finnish Navy, 1979

D: 115 tons (135 ft) **S:** 18 kts **Dim:** $34.0 \times 6.0 \times 1.8$ **A:** 4/23-mm AA (II \times 2) -2/RBU-1200 ASW RL (V \times 2) - mines

M: 2 Mercedes-Benz diesels; 2 CP props; 2,500 hp Man: 20 tot.

Remarks: Ruissalo and Rihtniemi classes are former convertible minesweeper/gunboats, modernized 1977-80. 51 and 52 originally only 31 meters overall and are 5.7 meters in beam. All five now have bow bulwarks.

MINE WARFARE SHIPS

Bldr: Wärtsilä, Helsinki 1 minelayer/training ship

Laid down L In serv. 8-6-79 01 POHJANMAA 5-78 28-8-78



Pohjanmaa (01)

Finnish Navy, 1983

D: 1,100 tons (fl) S: 20 kts Dim: 78.3 × 11.6 × 3.0

A: 1/120-mm Bofors DP - 2/40-mm AA (I × 2) - 8/23-mm AA (II × 4) -2/RBU-1200 ASW RL (II × 2) - mines

Electron Equipt: Radar: 1/navigational, 1/H.S.A. DA 05 air search, 1/9GA 208, 1/9LV100

Sonar: 2 sets

M: 2 Wärtsilä-Vasa 16V22 diesels; 2 CP prop; 5,800 hp

Electric: 1,040 kVA Range: 3,500/17 Man: 80 crew plus 70 cadets

Remarks: Training facilities fitted in portable containers mounted on the two internal mine rails, easily removable if the ship is required for combat. Bow-thruster. Six 102-mm flare RL rails mounted on 120-mm mount.

1 Soviet Riga-class former frigate (In serv. circa 1957)

02 HAMEENMAA



Hameenma (02)

L. & L. Van Ginderen, 9-83

D: 1,282 tons (1510 fl) **S:** 30 kts **Dim:** 91.0 (87.0 pp) × 10.2 × 3.2

A: 2/100-mm DP (I × 2) -2/40-mm Bofors AA (I × 2) -2/30-mm AA (II × 2) 4/BMB-2 d.c. mortars - 2/d.c. racks - 2 mine rails

Electron Equipt: Radar: 1/Decca navigational, 1/Slim Net, 1/Sun Visor B

M: 2 sets GT; 2 props; 20,000 hp Boilers: 2: 27 kg/cm², 360°C

Electric: 450 kw Range: 550/28; 2,000/13 Fuel: 229 tons Man: 175 tot.

Remarks: Transferred 1964. Sister Uusimaa stricken 1980 for spares and Hameenmaa redesignated as a minelayer, with torpedo tubes, after 100-mm gun and some ASW equipment deleted. Twin 30-mm AA mount at extreme bow. Wasp Head director with Sun Visor B radar for 100-mm fire control.

1 coastal minelayer

05 KEIHASSALMI

Bldr: Valmet Oy, Helsinki (L: 16-3-57)



Keihassalmi (05)

L. & L. Van Ginderen, 1982

D: 290 tons (360 fl) S: 15 kts Dim: 56.0 × 7.7 × 2.0 A: 4/30-mm AA (II × 2) - 2/20-mm AA (I × 2) - 100 mines Electron Equipt: Radar: 1/navigational, 1/Drum Tilt M: 2 Wärtsilä diesels; 2 props; 2,000 hp Man: 60 tot.

Remarks: Given Soviet guns 1972, Drum Tilt f.c. radar 1976.

MINE WARFARE SHIPS (continued)

| • 6 Kuha-class inshore minesweepe | ers Bldr: Laivateollisuus | , Turku |
|-----------------------------------|---------------------------|---------|
| * | | * |

| | In serv. | | In serv. | | In serv. |
|---------|----------|---------|----------|---------|----------|
| Кина 21 | 28-6-74 | Kuha 23 | -75 | Kuha 25 | 17-6-75 |
| Кина 22 | -74 | Kuha 24 | 7-3-75 | Кина 26 | 13-11-75 |



Kuha 22 - now has twin 23-mm AA aft, 12.7-mm mg fwd

1974

D: 90 tons (fl) S: 12 kts Dim: 26.6 × 6.9 × 2.0

A: 2/23-mm AA (II × 1) - 1/12.7-mm mg Man: 2 officers, 12 men M: 2 Cummins NT-380M diesels; 2 outboard-drive props; 600 hp

Remarks: Glass-reinforced plastic hulls. Plans for eight additional canceled. Engines, flexibly mounted, drive rudder/propellers through hydrostatic transmissions. Can tow Type F-82 electrode sweep while also controlling a Kiskii drone with a similar sweep deployed.

♦ 7 Kiskii-class drone minesweepers Bldr: Fiskars Turun, Turku

| | Laid down | L | In serv. |
|--------------|-----------|----------|----------|
| 521 Kiskii 1 | | | 1983 |
| 522 Kiskii 2 | 20-1-83 | 21-10-83 | 4-11-83 |
| 523 Kiskii 3 | 14-2-83 | 10-11-83 | 28-11-83 |
| 524 Kiskii 4 | 5-4-83 | 28-11-83 | 12-12-83 |
| 525 KISKII 5 | 16-5-83 | 2-5-84 | 24-5-83 |
| 526 KISKII 6 | 29-8-83 | 9-5-84 | 24-5-83 |
| 527 KISKII 7 | 12-9-83 | 10-5-84 | 24-5-83 |
| | | | |



Kiskii class

Finnish Navy, 1983

D: 17 tons (20 fl) S: 11 kts Dim: 15.18 × 4.10 × 1.20 A: 1/20-mm AA Range: 250/10 Man: 4 tot.

M: 2 Valmet 611 CSMP diesels; 2 Hamilton waterjets; 340 hp

Remarks: Can be operated by crews or under remote control by Kuha-class inshore minesweepers. Glass-reinforced plastic construction. Tow a Type F-82 electrode sweep to counter magnetic mines and can also counter acoustic mines. Kiskii 1 was a trials prototype.

Note: Two small non-self-propelled minelaying barges were ordered from Lehtinen Sy, Rauma, in 12-84.

AMPHIBIOUS WARFARE SHIPS

 4 landing craft/patrol boats Bldr: 2 by Hollming, 2 by Rauma-Repola

D: 28 tons (38 fl) S: 24 kts Dim: 20.50 × 5.90 × 1.00

A: 1/20-mm AA - mines Range: 240/24 Man: 4 tot.

M: 2 Wizeman-MTU diesels; 2 KaMeWa waterjets; 1,100 hp

REMARKS: Ordered 17-1-83; laid down 8/9-83.

• 3 Kampela-class utility landing craft Bldr: Enso-Gutzeit, Savonlinna

Kampela 1 (In serv. 29-7-76) Kampela 2 (In serv. 21-10-76) Kampela 3 (In serv. 23-10-79)

D: 90 tons (260 fl) S: 9 kts Dim: 32.5 × 8.0 × 1.5 Man: 10 tot. A: A9/23-mm AA (II × 2) — mines M: 2 Scania diesels; 2 props; 460 hp

Remarks: Kampela 3 built by Finnmekano, Teija.

• 6 Kala-class utility landing craft Bldr: Rauma-Repola, Rauma (In serv. 1956-59)

KALA 1-KALA 6

D: 60 tons (200 fl) S: 9 kts Dim: 27.0 × 8.0 × 1.8 Man: 10 tot. A: 1/20-mm AA - 34 mines M: 2 Valmet diesels; 2 props; 360 hp



Kampela class

Finnish Navy, 1984

♦ 5 Kave-class landing craft Bldr: Hollming, Rauma (In serv. 1956-60)

KAVE 1 KAVE 2 KAVE 3 KAVE 4 KAVE 6

D: 27 tons (60 fl) S: 9 kts Dim: 18.0 × 5.0 × 1.3 A: 1/20-mm AA

M: 2 Valmet diesels; 2 props; 360 hp Man: 3 tot.

Remarks: Kave 1 built by Haminen Konepaja Oy.

AUXILIARY SHIPS

Note: A new naval tug was ordered 12-84 from Lehtinen SY, Rauma; no data available.

♦ 1 pollution cleanup ship

Bldr: Laivateollisuus, Turku

99 Hylse (In serv. 3-6-81)

D: 1,500 (fl) S: 7 kts Dim: 49.9 × 12.5 × 3.0

M: 2 Saab-Scania DSI-14 diesels; 2 retractable, steerable props; 680 hp

Remarks: Owned by Board of Navigation, operated by Navy, with civilian crew. Has bow ramp on rectangular hull and can be used to transport 100 tons of deck cargo. Storage tanks can hold 550 m3 of recovered seawater/oil slurry and 850 m3 recovered oil. One 10-m and one 13-m oil-skimming boats carried.

♦ 1 missile patrol boat tender

Bldr: Wärtsilä, Helsinki

90 Louhi (ex-Sisu)(L: 24-9-38)



Louhi (90)

1979

D: 2,075 tons S: 16 kts Dim: 64.1 × 14.2 × 5.1 A: 4/37-mm AA (II × 2) M: 2 Atlas diesels, electric drive; 2 props; 4,000 hp Man: 100 tot.

Remarks: Former icebreaker, converted 1975 as tender to missile boats. Refitted 1979; received AA guns from Riga-class frigate.

Bldr: Rauma-Repola (L: 15-12-65) ♦ 1 cable ship

PUTSAARI

D: 430 tons (fl) S: 10 kts Dim: 45.5 × 8.9 × 2.3 M: 1 Wärtsilä diesel; 1 prop; 450 hp Man: 20 tot.

♦ 1 salvage tender

220 Parainen (ex-Pellinki, ex-Meteor)



Parainen (220)

AUXILIARY SHIPS (continued)

D: 700 tons S: 12 kts Dim: . . . × M: Diesels

Remarks: 352 grt. Purchased 1978. Former rescue tug, has diving and fire-fighting facilities.

♦ 1 modified Valas-class diving tender Bldr: Hollming SY, Rauma

. . . Mersu (In serv. 10-80)

D: 300 tons (fl) S: 12 kts Dim: 30.65 × 8.1 × 3.4

A: 2/23-mm AA (II × 1) - 1/12.7-mm mg

M: 1 Wärtsilä Vasa 22 diesel; 1 prop; 1,450 hp Man: 1 officer, 6 crew; 20 divers

Remarks: Can also be used to transport 300 personnel. Appearance generally as the Valas class.

4 Valas-class general-service tenders Bldr: Hollming Oy, Rauma (In serv. 1979-81)

220 Valas 221 Vahakarı 222 Vaarlehti 223 Vänö



Vahakari (221)

1980

D: 100 tons (275 fl) **S:** 12 kts **Dim:** $30.65 \times 7.85 \times 3.40$

A: 2/23-mm AA (II \times 1) -1/12.7-mm mg -20 mines

M: 1 Wärsilä Vasa 22 diesel; 1 prop; 1,300 hp Man: 11 tot.

Remarks: Ordered 1978. Can break .4-meter ice. Carry 30 tons of cargo or 150 passengers. Stern ramp for vehicle-loading or minelaying.

◆ 3 Pukkio-class general-service tenders Bldr: Valmet, Turku (In serv. 1947-48)

PANSIO PORKKALA PYHARANTA

D: 162 tons S: 10 kts Dim: 28.5 × 6.0 × 2.7

A: 1/40-mm AA — 1/20-mm AA — 20 mines M: 1 Wärtsilä diesel; 1 prop; 300 hp Man: 10 tot.

Remarks: Used as tugs, transports, minelayers, and patrol boats.

6 Hauki-class personnel transports
 Valmet, Kolka (In serv. 1978-80)
 Bldr: 1-3: Linnan Telakka, Turku; 4-6:



Hankoniemi (334)

1980

D: 46 tons (fl) S: 10 kts Dim: 14.4 × 4.6 × 2.2
 M: 2 Valmet 611 CSM diesels; 1 prop; 280 hp Man: 2 tot.

Remarks: Cargo: 45 personnel or 6 tons supplies. Can break .2-meter ice. Operated for the Coast Artillery. • 2 Lohi-class personnel transports

Bldr: Savonlinna SY (In serv. 7-9-84)

Lони **L**онм

D: 28 tons (38 fl) S: 24 kts Dim: 20.50 × 5.90 × 1.00

A: 1/20-mm AA - mines

M: 2 Wizeman-Mercedes Benz diesels; 2 KaMeWa waterjets; 1,000 hp

Range: 240/24 Man: . .

Remarks: Have a near-vertical bow door and ramp for landing personnel embarked.

Ordered 17-1-83 and laid down 8-83 and 9-83. Aluminum construction. Used as VIP transports, patrol hospital launches, etc.

• 1 presidential yacht

Bldr: Uusikaupanki SY (In serv. 5-84)

KULTARANTA VII

D: 15 tons (fl) S: 25 kts Dim: 12.5 × 4.0 × 1.4 M: 2 diesels; 2 props; 700 hp

Remarks: Described as a "communications ship" and used is a presidential yacht in summer and for search and rescue and medical transport in winter.

6 Ahven-class training tenders
 Bldr: Valmet, Kotka

A1 Ahven A2 N. A3 N. A4 N. A5 N. A6 N.

D: . . . S: . . . Dim: 10.3 × 3.2 × . . .

M: 1 Valmet 611 diesel; . . . hp

Remarks: Glass-reinforced plastic construction. First unit delivered 1980. Intended as tugs, buoy tenders, and navigational training craft.

57 (+12) service launches, K, Y, L, YM, and H and new construction
 D: 2 to 34 tons
 S: 7 to 10 kts

Remarks: For local transport, primarily in support of Coast Artillery. Four 9-ton launches were ordered 12-84 from Unden Kaupungin SY, Uusikaupunki, and 8- to 10-ton launches were ordered from Valkoisen SY, Paimio.



Coast Artillery service launch

1982

COAST GUARD

Operated by the Ministry of the Interior. All ships now have black hull with a redwhite-red diagonal stripe, as on U.S. Coast Guard ships. Upperworks are white.

Aviation: Three Soviet Mi-8 helicopters were purchased 12-80 for search-and-rescue duties.

PATROL BOATS ("Outer Sea Patrol Ships")

♦ 0 (+1) improved Turva class

Bldr: Rauma-Repola SY, Uusikaupunki

N. . . (In serv. . . .)

D: 700 tons S: 16 kts Dim: 49.00 (43.80 pp) × 10.00 × 4.60

A: 1/20-mm AA Electron Equipt: Radar: .

M: 2 Wärtsilä-Vasa 8- R22 diesels; 2 props; 3,200 hp

REMARKS: Ordered 12-12-84.

• 1 new construction

Bldr: Hollming, Rauma

N. . .

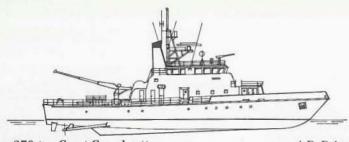
D: 250 tons(270 fl) S: 20 kts Dim: 43.80 (38.50 pp) × 8.80 × 2.20

A: . . .

M: 2 MTU 16V536 TB93 diesels; 2 KaMeWa waterjets; 7,500 hp

Remarks: Ordered 21-11-84. Aluminum construction.

PATROL BOATS (continued)



New 270-ton Coast Guard cutter

A.D. Baker III, 5-85

• 1 improved Valpas class

Bldr: Laivateollisuus, Turku

Turva (In serv. 15-12-77)



Turva

L. & L. Van Ginderen, 1984

D: 550 tons S: 16 kts Dim: 48.5 × 8.6 × 3.9 A: 1/20-mm AA M: 2 Wärtsilä diesels; 1 prop; 2,000 hp

Remarks: Ordered 24-6-75. An improved Valpas, similar in appearance.

1 Valpas class

Bldr: Laivateollisuus, Turku

Laid down

L 21-7-71

20-5-70 22-12-70 VALPAS



Valpas

D: 545 tons S: 15 kts Dim: 48.3 × 8.7 × 4.0 A: 1/20-mm AA M: 1 Werkspoor TMABS-398 diesel; 1 CP prop; 2,000 hp Man: 22 tot.

• 1 Viima class

Bldr: Laivateollisuus, Turku

Remarks: Ice-strengthened, equipped with sonar.

In serv. VIIMA 20-7-64 12-10-64

> D: 135 tons S: 23 kts Dim: 35.7 × 6.6 × 2.0 A: 1/20-mm AA M: 3 Maybach diesels; 3 CP props; 4,050 hp Man: 12 tot.

Remarks: A variant of the Finnish Navy Ruissalo class.

• 1 Silma class Bldr: Laivateollisuus, Turku

Laid down In serv. SILMA 30-8-62 23-3-63 19-8-63

D: 530 tons S: 15 kts Dim: 48.3 × 8.3 × 4.3 A: 1/20-mm AA M: 1 Werkspoor diesel; 1 prop; 1,800 hp Man: 22 tot.

 1 Uisko class Bldr: Valmet, Helsinki (In serv. 1959)

Uisko

D: 370 tons S: 15 kts Dim: 43.4 × 7.3 × 3.83 A: 1/20-mm AA M: 1 Werkspoor diesel; 1 prop; 1,800 hp Man: 20 tot.

♦ 1 (+6) Lokki class

Bldr: Valmet-Laivateollisuus, Turku

Lokki (In serv. 27-11-81)



Lokki

Liavateollisuus, 1981

D: 53 tons (60 fl) S: 25 kts Dim: 26.8 × 5.2 × . . . A: . M: MTU 8V396 TC83 diesels; 2 props; 2,040 hp Electric: 30 kw Man: 8 tot.

Remarks: Aluminum construction. Prototype ordered 17-5-80. To replace Koskelo class. No further orders as of mid-1985.

 8 Koskelo class Bldr: Valmet, Helsinki (In serv. 1955-60)

Koskelo KHOVI TAVI KAAKKURI KIISLA KUIKKA KURKI TELKKÄ

D: 75 tons (97 fl) S: 23 kts Dim: 29.42 × 5.02 × 1.5 A: 1/20-mm AA M: Mercedes-Benz diesels; 2 props; 2,700 hp Man: 11 tot.

Remarks: All but one (used as a replacement for the training ship Eckero) are to be discarded on completion of units of the new Lokki class. All modernized and re-engine 1970-74 by Laivateollisuus, Turku.

SERVICE CRAFT

• 98 small craft, Series RV, NV, and PV

D: 1.1 to 20 tons S: Most, 9 to 13 kts Dim: 8 to 14 overall

Remarks: The newest are RV 37 to RV 39, delivered 1978 by Hollming.

D: 20 tons S: 12 kts Dim: 14.3 × 3.5 × . . . M: 1 MTU diesel; 300 hp

ICEBREAKERS (Under Board of Navigation)

♦ D (+1+1) new construction

Bldr: Wärtsilä, Helsinki

KARHU II (In serv. 1986)



Karhu II - artist's impression

Hwänolä/Wärtsilä, 1984

S: . . . Dim: 99.0 × 24.20 × 8.00 M: 4 Wärtsilä Vasa 16V32 diesels (7,425 hp each); Kymi-Stromberg a.c. cyclo-converters, 3 props; 17,700 hp.

Remarks: Ordered 29-3-84. Will have 2 transverse thrusters, bow propeller, Wärtsilä "bubbler" system. A second unit is planned.

FINLAND (continued) ICEBREAKERS (continued)

• 2 Urho class Bldr: Wärtsilä, Helsinki URHO (In serv. 5-3-75) SISU (In serv. 28-1-76)



Wärtsilä, 1975 Urho

D: 7,960 tons (9,500 fl) S: 18 kts Dim: 104.6 × 23.8 × 8.3 M: 5 SEMT-Pielstick 5,000-hp diesels, electric drive; 4 props; 22,000 hp

Remarks: Sisters to Swedish Atle class. One helicopter. Two props forward, two aft.

• 3 Tarmo class Bldr: Wärtsilä, Helsinki

TARMO VARMA APU



Varma

Wärtsilä

D: 4,890 tons S: 17 kts Dim: 85.7 × 21.7 × 6.8 M: 4 Sulzer diesels, electric drive; 4 props; 10,000 hp

Remarks: In service 1963, 1968, and 1970, respectively. Two props forward, two aft.

• 2 Karhu class Bldr: Wärtsilä, Helsinki

MURTJALA SAMPO

D: 3,540 tons S: 16 kts Dim: 74.2 × 17.4 × 6.4 M: Diesel-electric; 4 props (2 fwd), 7,500 hp

Remarks: In service 1959 and 1960, respectively. Sister Hansa is owned by West Germany (in serv. 25-11-66), has a Finnish crew, and summers in Finnish waters. Sister Korhu was to be discarded on completion of Karhu II.

• 1 Voima class Bldr: Wärtsilä, Helsinki (In serv. 1954)

VOIMA

D: 4,415 tons S: 16.5 kts Dim: 83.6 × 19.4 × 6.8

M: 6 Wärtsilä Vasa 16V22 diesels (17,460 hp), electric drive; 4 props; 14,000 hp

Remarks: Reconstructed and re-engined 1978-79 by Wärtsilä; expected to serve until

Note: The Board of Navigation also owns the pollution-control ship Hylse (99), operated by the navy; see entry on navy pages.



Voima

1 ACONIT

1 Duperré '

2 D'ESTRÉES

1 La Galissonnière

1979

FRANCE

French Republic

Personnel (1985): 67,040 men and women on active duty, including 4,458 officers, 28,951 chief petty officers and petty officers, and 33,631 other enlisted personnel. Also on duty are 2,952 members of the Gendarmerie Marine.

NAVAL AVIATION: In service are 27 F-8E Crusader interceptors, 70 Super Étendard fighter-bombers, 13 Étendard IVP photoreconnaissance aircraft, 32 Atlantic Mk 1 and 5 Gardian patrol aircraft, 18 Super Frélon, and 38 WG-13 Lynx helicopters, and 188 service and training aircraft and helicopters. See aviation section after aircraft carriers for additional details.

Merchant Marine (1984): 1,174 ships - 8,945,046 grt (tankers: 94 ships - 5,336,202 grt)

| Warships In Service (| OR UNDER C | ONSTRUC | TION As Of 1 January 1986 |
|--|--|---|--|
| | L | Tons | Main armament |
| • 3 aircraft carriers | | | |
| 2 CLEMENCEAU (fixed-wing) 1 JEANNE D'ARC (helicopter) | 1957-60 1961 | 22,000 10,000 | 8/100-mm DP, 40 aircraft 4/100-mm DP, 6/MM 38 Exocet, 8 heavy helicopters |
| ♦ 24 (+3) submarines | | | |
| 1 L'INFLEXIBLE (nuclear) 5 LE REDOUTABLE (nuclear) 1 GYMNOTE 2 (+3) RUBIS (nuclear) 4 AGOSTA 9 DAPHNE 2 NARVAL | 1982 1967-77 1964 1979 1974-76 1959-67 1954-58 | 8,000 8,000 3,000 2,265 1,200 700 1,320 | 16 missiles, 4 TT 16 missiles, 4 TT 2 missiles 4 TT 4 TT 12 TT 6 TT |
| • 1 guided-missile cruiser | | | |
| 1 Colbert | 1956 | 8,500 | 1 Masurca, 4/MM38, 2/100-mm DP, 12/57-mm AA |
| ♦ 16 (+7)destroyers | | | |
| 0(+4) C 70 AA | 1984-90 | 4,000 | Mk 13 launcher, 8/MM 40, 2/100-mm DP, 2 TT |
| 4 (+3) Georges Leygues | 1975- | 3,800 | 1/100-mm DP, 4/MM 38, 2 TT 2 WG 13 Lynx helicopters |
| 3 Tourville | 1972-74 | 4,800 | 1 Malafon, 6/MM 38, 1 Crotale, 2/100-mm DP, 2 TT, 2 WG 13 Lynx helicopters |
| 2 Suffren | 1965-66 | 5,090 | 1 Masurca, 2/100-mm DP, 1 Ma- lafon, 4/MM 38 |
| # 141/2007 CODE | 1070 | O FOO | 0.000 10 0 0000 00 1361 |

1970

1960

1956

1954

2,750

2,750

2,750

3,500 8/MM 40, 2/100-mm DP, 1 Mala-

1/100-mm DP, 4/MM 38

copter

weapons

fon, ASW mortar, 2 TT 2/100-mm DP, 1 Malafon, 1 heli-

2/100-mm DP, 1 Malafon, ASW

| WARSHIPS (continued) | | | |
|-----------------------------|-----------|-------|--|
| 2 Kersaint | 1954 | 2,750 | 1 SM-1MR, 6/57-mm AA, 1 ASW RL, 6 TT |
| ♦ 25 frigates | | | |
| 17 D'Estienne D'Orves | 1973-80 | 1,100 | 1/100-mm DP, 2/MM 38, 1 ASW rocket launcher, 4 TT |
| 1 Balny | 1962 | 1,750 | 2/100-mm DP, 1 ASW mortar, 6 TT |
| 7 Commandant Rivière | 1958-63 | 1,750 | 4/MM 38, 2/100-mm DP, 1 ASW mortar, 6 TT |
| ♦ 19 (+4) patrol boats and | craft | | |
| 6 (+4) P 400 | 1984- | 320 | 1/40-mm AA |
| 4 TRIDENT | 1976 | 115 | 1/40-mm 6/SS 12 SSM |
| 1 Sterne | 1979 | 270 | 2 mg |
| 1 La Combattante | 1963 | 180 | 2/40-mm AA, 4/SS 12 SSM |
| 1 Mercure | 1957 | . 365 | |
| 1 Sirius | 1954-57 | 400 | 1/40-mm AA, 1 or 2/20-mm |
| 4 "HAM" | 1954-55 | 140 | 1/20-mm AA |
| 1 trawler type | 1965 | 1,800 | 1/40-mm AA |
| • 25 (+5) minehunters and | mineswee | pers | |
| 5 (+5) Tripartite (mine- | | | |
| hunters) | 1979 | 500 | 1/20-mm AA |
| 5 Circé (minehunters) | 1970-72 | 460 | 1/20-mm AA |
| 10 U.S. MSO (5 minehunters) | 1953-56 | 700 | 1/40-mm AA |
| 5 Sirius | 1955-56 | 400 | 1 or 2/20-mm AA |
| ♦ 18 (+1) amphibious warf | are ships | | |
| 0 (+1) TCD 90 | 1968 | 9300 | 2 Sadral, 1/40-mm AA |
| 2 Ouragan | 1963-67 | 5,800 | 4/40-mm AA |
| 3 Argens | 1958-60 | 1,750 | 3/40-mm AA |
| 4 Champlain (Batral) | 1973-82 | 750 | 2/40-mm AA |
| 9 EDIC | 1958-69 | 250 | 2/20-mm AA |
| | | | |

1984-88 Program

| | C | orders | Deli | veries |
|---|--------------|----------------------------|---|--|
| Program | 1984-85 | 1986-88 | 1984-88 | Post-1988 |
| Nuclear-powered aircraft carriers | | 1 | | 1 |
| Destroyers, frig- ates, and cor- vettes | | 3 FL 25 | 2 C70 ASW (#5 & 6) 1 C70 AA (#1) | 1 C70 ASW (#7) 3 C70 AA 3 FL 25 |
| Nuclear-powered attack submarines | 1 (#6) | 2 (#7, 8) | 3 (#2, 3, 4) | 4 (#5-8) |
| Mine counter- measures ships | 2 exp* 4† | 5‡ | 8 Tripartite 2 exp.* 4† | 1 Tripartite 5‡ |
| Patrol boats | 4 P400 | | 10 P400 | |
| Replenishment ships | | 1 Durance (#5) 1 AFS | 1 Durance (#4) | 1 Durance (#5) 1 AFS |
| Landing ships | 1 LSD | 2 (#2 & 3) | | 3 (LSD 1-3) |
| Atlantic Mk 2 patrol aircraft | 2 | 14 | | 16 |

*Mine warfare experimental ships

†Mine disposal diver support ships

‡900-ton oceangoing minehunters, able to sweep to 300 m depths.

Note: Nuclear-powered attack submarines 2-5 are of the Rubis class; 6-8 are of the "Post-Rubis" class

WEAPONS AND SYSTEMS

A. MISSILES

• strategic ballistic

This missile, which has replaced the M 2, has two stages, is aerodynamically unstable, and has the following characteristics:

| Total height | 10.40 m | Launch | compressed air |
|------------------|---------|---------------|----------------|
| Height 1st stage | 5.20 m | Launch weight | 20 tons |
| Height 2nd stage | 2.60 m | Max. range | 3,000 km |
| Diameter | 1.50 m | | |

Solid propulsion systems

| cond propers | wir oyoutin |
|---------------|--------------------|
| fuel mass | 10 tons, 1st stage |
| | 6 tons, 2nd stage |
| thrust | 45 tons, 1st stage |
| | 32 tons, 2nd stage |
| burn duration | 50 sec., 1st stage |
| | 52 sec., 2nd stage |

The thermonuclear warhead is in the megaton range and has been especially "hardened" to facilitate penetration and to counter nuclear anti-missile defenses.

M 4, Improved M 4

This missile entered service in 1985 aboard L'Inflexible and has three stages. Characteristics include:

| Total height | 11.05 m | Launch | powder charge |
|--------------|---------|---------------|------------------------|
| Diameter | 1.93 m | Launch weight | around 36 tons |
| | | Max range | 4.000 km (M 4B: 5.000) |

Solid propulsion system:

fuel mass 20 tons, 1st stage; 8 tons, 2nd stage; 1.5 tons, 3rd stage 70 tons, 1st stage; 30 tons, 2nd stage; 7 tons, 3rd stage thrust 65 sec., 1st stage; 75 sec., 2nd stage; 45 sec., 3rd stage burn duration

The payload will be 6 warheads of around 150 KT, of great precision and with improved penetration over the already excellent M 20. The launch interval will be shorter between missiles than with the M 20 and will be capable of being carried out at greater depths. The first at-sea firings took place in early 3-82, from Gymnote. M 4 will be backfitted into all earlier submarines except Le Redoutable by 1992. To effect installation, it will not be necessary to replace the existing missile tubes. The M 4 has 6 TN-70 warheads, which spread over a 150- × 350-km area at a range of 4,000 km; The Improved M 4 uses the TN-71 reentry vehicle to a range of 5,000 km.

A new weapon being developed for the "second generation" ballistic-missile submarines. To have a range of 6,000 km (3,240 n.m.), with multiple independently targeted warheads (MIRV).

• surface-to-air

Masurca

A medium-range missile (30 nautical-mile range, intercept between 100 ft and 75,000 ft) launched by a solid-propellant booster, which in a few seconds brings it to a speed close to Mach 3; a slower-burning solid propellant maintains this speed throughout the flight. The missile and booster together are 8.6 m long and weight 2,098 kg. Other characteristics are:

| | Missile | Booster |
|--------------|----------|------------|
| Length | 5.38 m | 3.32 m |
| Diameter | 0.406 m | 0.57 m |
| Span of fins | _ | 1.5 m |
| Weight | 950.0 kg | 1,148.0 kg |
| Warhead | 100 0 kg | _ |

Mod. 3, a semiactive homing missile, is the only one now in service. It follows a trajectory determined by proportional navigation, keeping its antenna pointed at the target, which is illuminated by the launching ship's radar transmitter.

Masurca, which is installed in the Suffren-class guided-missile destroyers and in the guided-missile cruiser Colbert, consists of (1) a target-designator and weapon-assign-

ment console, including a computer, which uses the shipboard search radar and the Senit automatic tactical data system, and (2) two guidance systems, each with: DRBR 51 tracking radar, a director carrying the rear-reference beam and illumination beam for the control system, an illumination beam, a twin launcher, storage and maintenance facilities, including two horizontal ready-service drums containing 18 missiles in addition to reserve missiles in the magazines, and IFF and control equipment.

The Masurca systems aboard Colbert and the Suffren class were modernized 1983-85 to keep the system up-to-date to the end of its expected service life (1995).

Standard SM-1 MR

A one-stage U.S.-designed-and-manufactured missile with solid fuel. Characteristics:

Length: 4.60 m Guidance: semiactive homing, proximity fuze

Range: 50,000 m, max. Diameter: .41 m

Interception altitude: 60 ft to 80,000 ft Weight: 590 kg The complete system consists of, in addition to the missile:

1 single Mk 13 launcher, 1 vertical stowage-loader containing 40 missiles, various computers, SPS 39B height-finding radar, and 2 SPG 51C tracking radars.

SM-1 MR is mounted on T-47-type destroyers modified for Tartar and will be installed in the C-70 AAW-type destroyers, which will have the DRBJ 11B height-finding radar. It has replaced the earlier Tartar ITR and SM-1A in French naval service.

A French Air Force missile adapted for naval use. Electronics are by Thomson-CSF and the missile by Matra. Characteristics for the R440N missile are:

Length: 2.930 m

MISSILES (continued)

Diameter: 0.156 m

Span: cruciform (0.54 m with fins extended), antipitching canards forward

Weight: 85.1 kg Range: 8,000 m

Interception altitudes: 150 ft to 12,000 ft

Warhead: 14 kg

Guidance: beam-riding, then detonation by infrared fuze incorporated in the missile

auncher: octuple

Crotale is installed on the F 67 and C 70 types of destroyers. It is used with DRBV 51C radar and has a Thomson tracking radar in the KU band. Eighteen reload missiles are carried in the magazine. The prototype was installed in the test ship *Ile d'Oléron* in May 1977, while the first operational installation was aboard *Georges Leygues* in 1978.

Crotale is being updated to enable it to handle Mach. 2.0 targets at altitudes down to 4 m. The missiles, named Crotale EDIR (Écartometrie Différentielle Infra Rouge), are being equipped with a new proximity fuze, and an infrared tracker is being added to the launcher/director; range is increased to 13,000 m. Will be carried by Clemenceau and Foch and by the 7th C 70-class ASW destroyer and will be backfitted in earlier Crotale ships beginning in 1986.

SADRAL (System d'Auto Défense Rapprocheé Anti-aérienne Leger)

A contract has been given to Matra to develop a new short-range lightweight surfaceto-air missile, the SATCP (Surface-Air, à Très Courte Portie). The system will have an automatic director and IR homing, with laser-backup proximity and impact fuzing. The missile itself, to be called "Mistral," will have:

Length: 1.80 m Warhead: 3 kg, tungsten ball

Diameter: 0.90 m Range: under 500 to around 6,000 m, at altitudes down to

Weight: 17 kg 3m.

Speed: Mach 2.7

The missiles will be installed in a 6-missile, rapid-reload, lightweight launcher. The system should be operational about 1988 in the antiaircraft destroyers of the C 70 AAW

Matra is also offering the vertically launched SAMAT system in several versions. SAMAT 1 and 2 would use the *Mica* missile body, derived from the *Magic*-successor air-to-air missile. SAMAT 1 would have IR homing, a range of 4 km, and is intended to supplement Crotale. SAMAT 2 would have active radar terminal homing, a range of 10-11 km, and is intended to replace Crotale. SAMAT 3 would use a ramjet sustainer motor for longer ranges and would have the SAMAT 2 seeker.

Aerospatiale is developing the SAN (Surface-Air Naval) missile system for deployment about 1995. It will have a 5-7-km range and use an I/J-band radar control system.

♦ Surface-to-surface

MM 38 Exocet Manufacturer: S.N.I.A.S. (Aerospatiale)

A homing missile with solid-fuel propulsion. Characteristics: Weight: 700 kg, approx. (explosive charge: more than 150 kg)

Speed: Mach 1 Diameter: 0.35 m

Range: 37 km, min Wingspan: 1.00 m

Length: 5.20 m Cylindrical body with a pointed nose, cruciform wings with

arrow shape.

The fire-control solution requires a fix on the target provided by the surface radar of the firing ship and uses the necessary equipment for launching the missile and determining the correct range and height bearing of the target.

The missile is launched at a slight elevation (about 15°). After the boost phase, it reaches its flight altitude and is stabilized at between 3 and 15 meters. Altitude is

maintained by a radar altimeter.

During the first part of the flight, the missile is automatically guided by an inertial system that has received the azimuth of the target. When within a certain distance from the target, an automatic homing radar begins to seek the target, picks it up and directs the missile. Great effort has been made to protect the missile from countermeasures during this phase. A new "Super ADAC" seeker, with improved anti-jamming features is offered for backfit to earlier missiles.

Detonation takes place upon impact or by pseudo-proximity fuze, according to interception conditions, size of the target ship, and the condition of the sea.

SM 39 Exocet

A submarine torpedo-tube-launched version of the Exocet concept, SM 39 began in 1981 aboard the *Narval*-class submarine *Requin*. It will have a range of 50 km. The missile is 4.7-m long by 350 mm in diameter and weights 650 kg. With its solid-fueled launch/ejection capsule, the missile is 5.8 m long, weights 1,350 kg, and fits within a 533-mm torpedo tube. The system operational 1985 on *Saphir*.

MM 40 Exocet

An offshoot of the MM 38 and the AM 39 and also built by S.N.I.A.S., the MM 40 is an over-the-horizon missile whose range will be adapted to radar performance, but it will be able to use fire-control data relayed by an outside source. Instead of the usual metal launcher, it has a fiberglass, cylindrical one, which, because it is lighter and has less fittings, increases firepower by allowing more missiles to be carried.

It has been proposed to equip the future C 70 ASW-type guided-missile destroyers with eight launchers each (four per side) for MM 40, and the *Montcalm* will be the first ship to have it. In older ships with box launchers for MM 38 Exocet missiles, the old launchers will be retained, with one MM 40 in each box.

Length: 5.80 m Weight: 850 kg Diameter: 0.35 m Speed: Mach .95 Wingspan: 1.135 m Range: 65 km

SS 12 M Manufacturer: Aerospatiale

Wire-guided, solid-fueled missile. Characteristics: Length: 1.870 m Weight: 75 kg (upon firing) Diameter: 0.210 m Warhead: 30 kg (about)

Wingspan: 0.650 Range: 5,500 m

No longer used on French Navy ships but is used by foreign fleets.

B. AVIATION MISSILES

Air-to-ground

ANS (Anti-navire Supersonique)

A new project, succeeding the ASMP project (Air-Surface à Moyenne Porte) and intended for use by Super Étendard carrier-based and Tornado land-based aircraft. A surface-to-surface version is projected. Being developed jointly by Aerospatiale and Messerschmidt-Bölkow-Blohm for service introduction in the late 1980s.

Length: 5.38 m Weight: . . .
Diameter: 0.35 m Range: 50-100 km
Wingspan: 0.956 m Speed: Mach 2.4

ANS will fit in the MM 40 Exocet launch tube for shipboard use. For use by helicopters, Atlantic II patrol airplanes, and West German Tornado fighter-bombers, it will employ two boosters.

AM 39 Manufacturer: Aerospatiale

This is the air-to-sea version of the MM 38. After being launched, it has the same flight characteristics as the MM 38.

Length: 4.633 m Diameter: 0.348 m Wingspan: 1.004 m

Weight: 650 kg (before launching)

Range: 50-70 km, according to altitude and speed at launch

Radar: Active home-seeking head (EMD)

Operational since 1978, AM 39 is known as a "fire and forget" missile because it permits an aircraft that has fired to renew its attack or to seek a new target. It will be used with the Atlantique Mk 2 patrol aircraft and the Super Étendard aircraft. It is equally suitable for use by such medium-weight helicopters as the Super Frélon.

AS 11 Builder: Aerospatiale

A wire-guided system with optical alignment on the target. Used for training by CM 175 aircraft.

Length: 1.210 m Wingspan: 0.50 m Diameter: 0.164 m Weight: 29.900 kg

AS 12 Builder: Aerospatiale

A wire-guided system with optical alignment on the target. Used by WG-13 Lynx helicopter.

Length: 1.870 m Wingspan: 0.650 m Diameter: 0.210 m Weight: 75 kg

Range: Maximum 7,500 to 8,000 m; minimum 1,500 m

AS 15 TT Builder: Aerospatiale

Length: 2.16 m Range: 15 km

Weight: 96 kg

For use by light helicopters (Dauphin, Lynx); developed under the Saudi Arabian "Sawari" program. First production deliveries 3-85.

AS 20 Builder: Aerospatiale

Length: 2.60 m Weight: 140 kg

Diameter: 0.25 m Guidance: radio command Wingspan: 0.80 m Range: 4,000 m to 8,000 m

Used in firing training for the AS 30.

AS 30 Builder: Aerospatiale

System developed for firing from a maneuvering aircraft at middle, low, or very low altitude. Used by the Super Étendard.

Length: 3.785 m Wingspan: 1.000 m Diameter: 0.342 m Total weight: 528 kg Range: maximum 9 to 12,000 m; minimum 1,500 m

Guidance: radio command

AS 37 Martel Builders: Matra and Hawker Siddeley Dynamics

Two types, television and anti-radar. Only the latter is used in the French Navy.

Length: 4.122 m Total weight: 531 m Diameter: 0.40 m Range: over 20,000 m Wingspan: 1.192 m

Passive homing head (EMD); the missile homes on the radar emissions of the enemy vessel. Immediately after being fired, the missile is on its own, permitting the aircraft to depart or evade. Used with Atlantic Mk 1 aircraft.

AVIATION MISSILES (continued)

Air-to-air

R 530 Builder: Matra

There are two versions of this missile: infrared (IR) and radar-homing (EMD).

Length: IR type: 3.198 m; EMD type: 3.284 m

Diamter: 0.263 m Wingspan: 1.103 m

Weight: IR type: 193.5 kg, EMD type: 192 kg Range: maximum 10,000 m: minimum 5,000 m

Guidance: Semi-passive-homing (MD) or infrared-homing

Sidewinder

The French Navy uses this air-to-air American missile (see U.S.A. section).

Magic Builder: Matra

Length: 2.900 m Diameter: 0.157 m Weight: 89 kg Range: 300/8,000 m

Wingspan: 0.660 m Guidance: Infrared-homing

C. GUNS

100-mm Compact (Usinor/Creusot-Loire)

Single-barrel automatic, for export only.

Weight of mount: 17.3 tons Length of barrel: 55 calibers

Range: 17,200 m

Muzzle-velocity: 870m/sec.

Max. effective range for surface fire: 12,000 m Max. effective range for autiaircraft fire: 6,000 m

Max. rate of fire: 90 max., or 20 or 45 rpm

Arc of elevation: -15° to +80°

Max. speed: training 50°/sec, elevation, 33°/sec

Most installations have a 42-round magazine, while those for Malaysia had 90-round magazines. Used by Saudi Arabian frigates; two sold to China.

100-mm, Models 1953 and 1968

Single-barrel automatic, for use against aircraft, surface vessels, or land targets. Model 1968 is a lighter version of Model 1953. The ammunition is the same. Characteristics of Model 1968:

Weight of mount: 22 tons Length of barrel: 55 calibers

Range at 40° elevation: 17,000 m

Maximum effective range for surface fire: 15,000 m Maximum effective range for antiaircraft fire: 8,000 m

Maximum rate of fire: 60 rounds/minute (78 rds/min in recent models)

Arc of elevation: -15° to +80°

Maximum speed: training, 40°/sec, elevation, 25°/sec

Model 1953 uses an analog fire-control system with electro-mechanical and electronic equipment for the fire-control solution. The director can be operated in optical and radar modes. Used in *Jeanne d'Arc*, the *Suffren* class, *La Galissonière*, *Surcouf* T-47 ASW destroyers, and the *Cdt. Rivière* class.

Model 1968 used a digital fire-control system, with central units, and memory disks or magnetic tape for data storage. Light radar gun director. Optical direction equipment can be added. Used in the Colbert, Tourville class, Georges Leygues class, Aconit, Duperré, and A-69 class.

57-mm Model 1951

Twin-barrel automatic:

Length of barrel: 60 calibers

Muzzle velocity: 865 m/sec Maximum range: 13,000 m

Effective antiaircraft range: 5,000 m

Maximum rate of fire: 60 rounds/min per barrel

Arc of elevation: -8° to 90°

Maximum rate of fire: 60 rounds per minute, per barrel

30-mm

Single-barrel automatic:

Length: 2.440 m Maximum effective range: 2,800 m

Weight: 4 tons Maximum rate of fire: 650 rounds per minute

Muzzle velocity: 1,000 m/sec

Used only on the frigates Balny, Enseigne de Vaisseau Henry, Protet, and Victor Schoelcher.

Also in service are typical 40-mm guns based on Bofors designs and 20-mm guns of Oerlikon design.

A new 20-mm mounting has been designed by DCAN for the GIAT CN-MIT-20F2 gun, which has a 650-720 rd/min firing rate. Two 150-round magazines are carried on the mount. Weight: 322 kg empty. Length: 2.6 m.

D. ANTISUBMARINE WEAPONS

Malafon

A glider that carries L-4 torpedoes and is launched with the assistance of a double booster. It is stabilized by automatic pilot and guided by radio command.

Glider: speed, 230 m/sec; range, 12,000 m

Missile: length, 6.15 m; diameter, 0.65 m; span, 3.30 m; weight, including torpedo, 1,500 kg

The Malafon, initially built by Latécoère in partnership with St. Trôpez, is installed in the two Suffren-class destroyers, La Galissonnière, the Type T-47 ASW conversions, the Aconit, and the Tourville-class destroyers.

A successor to Malafon is planned, using the Murène homing torpedo as a payload.

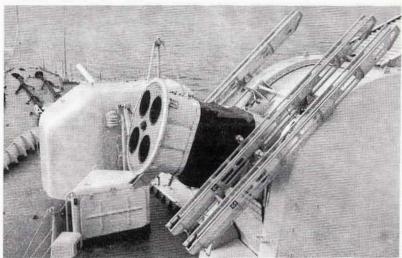


Malafon on launcher

M. Louagie, 6-84

375-mm Rocket Launchers, Models 1964 or 1972

Sextuple mount. Automatic loading in vertical position. Firing rate, 1 rocket/second. Range: 1,600 m. Time or proximity fuze. Based on Bofors quadruple mounting. Normally has six illumination-flare rocket rails mounted also.



Automatic-loading 305-mm ASW and bombardment mortar—with flare rails

305-mm Mortar

Quadruple mount; automatic loading. ASW projectile weight: 230 kg; range: 400 to 3,000 m. Can also fire a 100-kg projectile against land targets; range: 6,000 m. Normally has four illumination-flare rocket rails mounted on the face of the rotating housing. Used only on the *Commandant Rivière* class (removed from *Aconit*).

E. TORPEDOES

♦ For surface ships:

| | Weight in kg | Diameter in mm | Speed in kts |
|------------------------|--------------|----------------|--------------|
| L 3 | 900 | 550 | 25 |
| L 4 | 500 | 533 | 30 |
| L 5, Mod. 1 and Mod. 4 | 1,000 | 533 | 35 |
| • For submarines | | | |
| Z 13 | 1,700 | 550 | 30 |
| E 12 | 1,600 | 550 | 25 |
| E 14 | 900 | 550 | 25 |
| L 5, Mod. 3 | 1,300 | 533 | 35 |
| F 17 Mod. 1 | 1,300 | 533 | 35 |
| F 17 Mod 2(Murène) | 1 390 | 533 | 35 |

TORPEDOES (continued)

· For aircraft

In addition to the U.S. Mk 46 torpedo, French naval aircraft use the L 4 torpedo.

Note: The new F 17P (F 17 Mod. 2) Murène general-purpose wire-guided ASW torpedo entered service in 1985. 5.62 m long, it weights 250 kg and used a silver-zinc battery. Range is 20-30 km.

F. SONARS

· For surface ships

| | Type | Frequency | Average range |
|----------|-------------------|-----------------------|--------------------|
| DUBA 1 | Hull | HF | 2,500 m |
| DUBA 3 | Hull | HF | 3,000 m |
| DUBV 24 | Hull | LF | 6,000 m |
| DUBV 23 | Bow | LF | see Remarks |
| DUBV 24C | Hull | MF | see Remarks |
| DUBV 43 | Towed | LF | see Remarks |
| DUBA 25 | Hull | MF (9 kHz) | see Remarks |
| DUBA 26 | Hull | MF | see Remarks |
| DUBM 20 | Hull - on Circé-o | class minehunters | |
| DUBM 21 | Hull-on new T | ripartite and modern | nized MSO mine- |
| | hunters | | |
| DUBM 41 | Towed - on mod | ernized MSO; sideso | can minehunting |
| DSBV 61 | A towed passive | linear array system, | VLF |
| Diodon | A 12 kHz hull-me | ounted sonar develop | ped for export. Is |
| | also available in | 11 and 13 kHz mode | els. |
| SQS-505 | Hull - Canadian | set on aircraft carri | ers |
| SQS-17 | U.S. mid-frequen | cy set on Cdt. Rivièr | re class |
| | | | |



DUBV 43 VDS fish and hoist gear on Aconit (D 609) S. Terzibaschitsch, 6-82

REMARKS: DUBV 23 and DUBV 43 are used simultaneously and, under normal soundpropagation conditions, achieve ranges of 8,000 and 10,000 meters; the DUBV-43C operates at depths of up to 700 m; when used with DUBV-43C, hull-mounted sonar becomes DUBV-24. In certain bathymetric conditions, the range is 20,000 meters. DUBA 25 is a new sonar designed for the A-69 class and the C 70 AA destroyers. The DUBM-41B can be towed at 10 kts and covers a 400-m swath, compared to the 4-kt/50-m capability of the DUBM 41.

♦ For submarines

Listening devices, active-passive sonars, and underwater telephone equipment, including:

| DUUA 1 | On the Narval and unmodernized Daphne classes, and Agosta: active |
|--------|--|
| DUUA 2 | On modernized Daphne, Agosta, and Rubis classes (DUUA 2B in latter): |
| | active |

DSUV 2 Hydrophone array on Narval and Daphne classes DSUV 22

Hydrophone array on the Rubis class DUUV 23 Panoramic passive array on the ballistic-missile submarines

DSUX 21 Multifunction system for L'Inflexible and earlier missile submarines

For helicopters

| | Frequency | Remark |
|--------|-----------|------------------|
| AQS-13 | HF | U.S. sonar |
| DUAV 4 | HF | In the WG-13 Lyn |

G. COMBAT INFORMATION SYSTEMS SENIT

This system serves four principal purposes:

It establishes the combat situation from the manual collection of information derived from detection equipment on board and from the automatic or manual collection of information from external sources.

It disseminates the above data to the ship and to other vessels by automatic means (Links 11 and 14).

It assists in decision making.

It transmits to the target-designation console all the information it requires.

The several versions of the SENIT are similar in general concept but differ in construction and programming in order to ensure fulfillment of the various missions assigned to each type of ship.

SENIT 1: A system with one or two computers. Installed in the Suffren, the Duquesne, and the Colbert.

SENIT 2: A single-computer system. Installed in the T-47 type Kersaint-class destroyers, as well as in the Duperré, which uses a version with two computers.

SENIT 3: A central system consisting of two computers and two memory banks, the entire group designed for the control of various weapons (guns, Malafon ASW system, torpedoes). Installed in the Aconit, and the three Tourville-class ships.

The above three systems are based on equipment of U.S. origin, some built in France under license.

SENIT 4: A system conceived by the French Navy's programming center and designed around the French Iris N 55 computer. Fitted in the Georges Leygues class.

SENIT 5: Also designed by the French Navy's programming center, this system will be fitted on small ships. It uses the French M 15 minicomputer.

SENIT 6: Another system designed by the French Navy's programming center. It will equip the future C-70 AAW version of the Georges Leygues class. It combines a number of M 15 computers and a new generation of display devices particularly adapted for command purposes.

DLT D3

All submarines subsequent to the Narval class use the Direction de Lancement Torpilles DLT D3. There are three identical data displays for current and historical target data, and the system can be used to launch torpedoes and missiles.

H. RADARS

Air search

DRBV 20C: Metric, long-range. Mounted on aircraft carriers and Colbert.

Mounted in T-47 ASW version destroyers, frigates, Duperré, Aconit, and DRBV 22A: La Galissonière. L-band (23 cm).

DRBV 22C: Ile d'Oléron.

DRBV 22D: Jeanne d'Arc, Henri Poincaré.

DRBV 22E: Rance.

DRBV-23B: On aircraft carriers DRBV 23C:

Mounted in Colbert. DRBV 26: Mounted in the Tourville and first 4 Georges Leygues class and aboard

AA destroyers. 150-n.m. range. Commercial name: Jupiter.

DRBV 27: New radar in development for the new carriers.

Height-finding/three-dimensional

Mounted in aircraft carriers, Colbert, Ile d'Oléron. "Nodding"-type DRBI 10:

antenna with "Robinson" feed.

Mounted in the Duquesne and Suffren; monopulse. DRBI 23:

American radar. Mounted on Standard-equipped T-47-class destroyers. SPS-39B: DRBJ 11B: Pulse-coded radar for the C-70 AAW-class guided-missile destroyers and

the new nuclear-powered carriers.

Surface and low-altitude air search

DRBV 15: Pulse-doppler design, with pulse-compression and frequency agility, intended to replace the DRBV 51. Commercial name: Sea Tiger. Replaced

DRBV 13 in Aconit and will replace DRBV 50 in the Suffren class, in the carrier Jeanne d'Arc, and in the final three C 70 ASW destroyers.

DRBV 31: Mounted on the Standard-equipped T-47-class destroyers.

DRBV 50: Mounted on aircraft carriers, Jeanne d'Arc, T-47 ASW destroyers, the

Rhin, Ile d'Oléron, Colbert, and La Galissonnière. DRRV 51A. Mounted on A-69 class and the Duperré. DRBV 51B:

Mounted on the Georges Leygues class. DRBV 51C: Mounted on the Tourville class.

Navigational

Decca RM 416, 1229, etc.: Commercial radars used on smaller units.

Fire-control

French Navy designator for Decca 1226 navigational radar. DRBN 32:

DRBC 31: For the 57-mm guns of the Colbert and T-47 Tartar destroyers.

DRBC 32A: For the 100-mm guns on ASW-modified T-47-class destroyers, some frigates, the Jeanne d'Arc, Clemenceau, and La Galissonnière.

For 100-mm guns on the Aconit.

DRBC 32B: DRBC 32C: Mounted on the Colbert, carriers, and the A69 class.

DRBC 32D: Mounted on the Tourville class.

Mounted on the A-69-class corvettes. X-band. DRBC 32E:

DRBC 33: A monopulse, frequency-agile system in development for the C 70 AA class and for backfit on the Suffren class.

SPG-51C: U.S. tracking radar used with the Standard system on the T-47-type

AAW destroyers. Tracking radar for the Masurca on the Colbert, Suffren, and Duquesne. DRBC 51:

C-band (5-cm) tracker, 7-cm command signal. Also in use is the DIBV Vampir, an infrared detection and fire-control system built by

Thomson-CSF.

I. COUNTERMEASURES

The French navy uses the eight-barreled Syllex chaff launcher (a version of the British Knebworth/Corvus), which is being replaced by the Sagaie, a long-range system. Smaller ships will receive the Dagaie system, and some major classes will get both. Both Sagaie and Dagaie are fired automatically by the electronic intercept system. Sagaie has a range of 8 km for chaff or 3 km for chaff/IR deception rounds.

Electronics countermeasures systems in use include:

Intercept systems: ARBR/ARBA 10C, ARBR 10F, ARBR 16, ARBR 17

Jammers: ARBB 32, ARBB 33

J. COMMUNICATIONS

Recent construction or recently modified major ships are receiving radome-mounted antennas for the Syracuse satellite communications transmission system. The system will be fully operational in 1987. Syracuse operates at 7-8 gHz and transmission rate is 2400 bit voice/75-baud telemetry per sec.

To ensure communications with submerged ballistic-missile submarines, the ELF Astarte system is being developed, with a transmitter at Rosnay. Also being developed is an airborne system using U.S. VLF equipment mounted in four Transall aircraft.

NUCLEAR-POWERED AIRCRAFT CARRIER

♦ 0 (+1) Richelieu class

Bldr: Brest Naval Arsenal

R. . . RICHELIEU

Laid down 6-88 In serv. 1996

D: 34,000 tons (39,680 fl) S: 27 kts at 38,060 tons

Dim: 261.50 (238.00 wl) × 61.00 (31.50 wl) × 8.45

A: 35 to 40 aircraft (including fixed-wing fighters and helicopters) — 56 SAAM vertical-launch SAM (VIII \times 7) — 3/Sadral point-defense SAM (VI \times 3) — possible 8/20-mm AA (I \times 8)

L

Electron Equipt: Radar: 2/Decca nav., 1/DRBJ 11B, 1/DRBV 15, 1/DRBV 27, EW: ARBR 17, ARBB 33, 4/Sagaie RL IR: DIBV 10 Vampir

M: 2 131-megawatt, type K15 pressurized-water reactor plants; double-reduction geared steam turbines; 2 4-bladed props; 83,000 hp

Electric: 13,100 kw (4/2,000-kw and 6/850-kw turbo alternators)

Man: 1,150 total ship's crew, plus 550 air group personnel (1,850 total accomm.)

Remarks: General: This ship represents an expansion on the abortive PH 74/PH 75 nuclear carrier program of the 1970s and is intended as replacement for *Clemenceau*, which will be 35 years old when the "PAN" (Porte-Avions Nuclear) enters service. A second unit to replace *Foch* falls outside the current 1984-88 planning program and would complete around 2000. Will be named *Richelieu*.

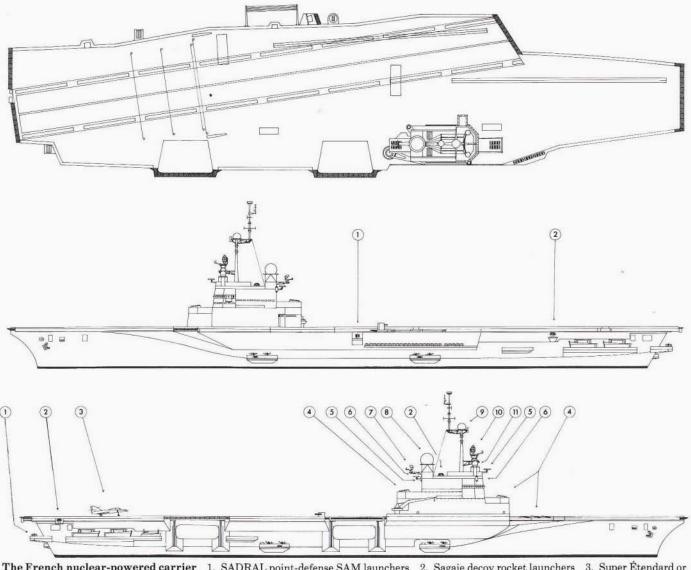
Hull: Design based on Clemenceau, but with more robust construction and protec-

tion systems. Fin stabilizers will be installed.

Aviation installations: The flight deck will be 261.5 m long, with a 195-m 8.3-degree angled deck portion. Maximum flight deck width is 60 m for an area of 12,300 m². There will be two U.S. Type C13 steam catapults, one on the angled deck and the other on the port side of the bow, an arrangement that emphasizes parking arrangements over an ability to launch and land simultaneously. There will be two 50-ton deck-edge elevators, both to starboard amidships. The nuclear propulsion arrangement allows the island to be mounted much farther forward than is standard practice, ahead of both elevators, and permits more efficient deck utilization. The 138-m long by 29-m broad by 6.1-m high (4,600 m²) hangar will be lower than on the Clemenceau class, but considerably larger in area and better protected. The second ship may substitute a ski-jump takeoff ramp for the bow catapult if V/STOL aircraft are carried. The initial combat aircraft will be the Super Étendard, but a new fighter bomber, the ACM (Avion de Combat Maritime) may be developed to replace the Super Étendard in the later 1990s. Aviation fuel capacity: 3,000 m³; munitions magazines: 4,900 m³.

Propulsion: The plant will be located in five compartments.

Electronics: Will have the SENIT-6 data system. There will be a rocket-launched torpedo decoy system.



The French nuclear-powered carrier 1. SADRAL point-defense SAM launchers 2. Sagaie decoy rocket launchers 3. Super Étendard or successor fighter-bomber 4. SAAM vertical-launch SAM groups 5. Decca nav. radars 6. EW antenna arrays 7. DRBV 15 radar 8. DRBJ 11B radar 9. TACAN 10. DRBV 27 radar 11. Syracuse SATCOMM antenna radomes

AIRCRAFT CARRIERS

♦ 2 Clemenceau class

Bldr Laid down Budget In serv. R 98 CLEMENCEAU 1953 Brest Arsenal 11-55 21-12-57 22-11-61 R 99 Fосн 1955 Ch. Atlantique 2-57 28-7-60 15-7-63

D: 22,000 tons (27,307 mean, 32,700 fl) S: 32 kts Range: 4,800/23; 7,500/18

Dim: 265.0 (238.0 pp) \times 31.72 beam \times 51.2 flight deck \times 7.8 light draft \times 8.6 fl A: R 98: 2/Crotale EDIR SAM syst. (VIII × 2; 36 missiles) -4/100-mm Model 1953 DP

R 99: 8/100-mm Model 1953 DP

Both: 16/Super Étendard, 10/F-8E Crusader, 3/Étendard IVP, 7/Alizé, 2 or

more/helicopters

Electron Equipt: R 98: Radar: 1/Decca 1226, 1/DRBV 23B, 1/DRBV 15, 2/DRBI 10, 2/DRBC 32C, 1/NRBA 51 EW: ARBR 16, ARBX 10B, 2/Sagaie RL Sonar: SQS-503 - TACAN: SRN-6

R 99: Radar: 1/Decca 1226, 1/DRBV 20C, 1/DRBV 23B, 2/DRBI 10, 1/DRBV 50, 1/NRBA 50, 2/DRBC 31C, 2/DRBC 32C

EW:.

Sonar: SQS-503 — TACAN:SRN-6

M: 2 sets Parsons GT; 2 props; 126,000 hp Electric: 14,000 kw Boilers: 6; 45 kg/cm², 450°C Fuel: 3,720 tons Endurance: 60 days Armor: Reinforced flight deck, armored bulkheads in engine room and magazines, reinforced-steel bridge superstructure

Man: Peacetime: As aircraft carriers: 64 officers, 476 petty officers, 798 other enlisted. Total: 1,338 men

As helicopter carriers: 45 officers, 392 petty officers, 547 other enlisted. Total: 984

Remarks: Flight deck 257 m in length; deck angled at 8° , 165.5×29.5 ; deck forward of the angled deck: 93 × 28; width of the deck abreast the island: 35. Hangar dimensions, 180 × 22 to 24 × 7 (height). Two elevators 16 m long, 11 m in width, one forward on the main flight deck, one slightly abaft the island, able to raise a 15-ton aircraft 8.50 m in 9 seconds. Two 50-meter Mitchell-Brown type BS5 steam catapults, able to launch 15/20-ton aircraft at 110 knots, one forward, another on the angled deck. New catapult mechanisms installed in the mid-1980s. Optical-mirror landing equipment of French manufacture.

The propulsion machinery was built by the Chantiers de l'Atlantique. Living spaces are air-conditioned. Medium-sized island with three bridges: flag, navigation, aviation. Communication systems, especially with fighter aircraft, are a significant aspect of the ships' capabilities.

The Foch, built in a special dry dock at St. Nazaire, was towed to Brest for the installation of her armament.

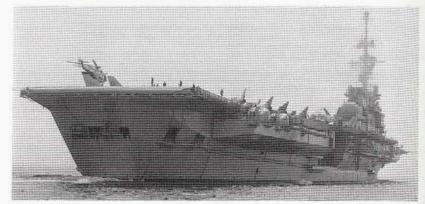
Aviation fuel: 1,800 m3 of jet fuel and 109 m3 of aviation gasoline carried by the Foch; 1,200 m3 of jet fuel and 400 m3 of aviation gasoline by the Clemenceau.

Between September 1977 and November 1978, Clemenceau underwent a significant refit in the Toulon dockyard. The work consisted of a general overhaul of her installations and living spaces, modernization of the flight deck, reinforcement of the arrest-



Foch (R 99) - with Syracuse SATCOMM system

Pradignac & Leo, 1984



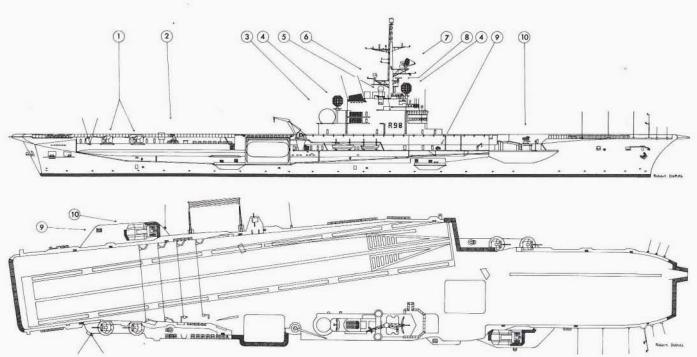
Foch (R 99)

Pradignac & Leo, 1984



Foch (R 99)

L. & L. Van Ginderen, 1983



Clemenceau (R 98) 1. 100-mm Model 1953 DP 2. DRBC 32C f.c. radar directors 3. NRBA 51 aircraft landing-aid radar 4. DRBI 10 height-finding radar 5. Syracuse SATCOMM antenna radomes 6. DRBV 15 search radar 7. DRBV 23B early-warning radar 8. Decca 1226 nav. radar 9. Sagaie decoy RL 10. Crotale EDIR SAM launchers

AIRCRAFT CARRIERS (continued)

ing gear, strengthening of the catapults, machinery overhaul, and the addition of two auxiliary boilers. Her electronic systems were modernized, and she was given the SENIT 2 combat data system removed from the inactivated destroyer Jaurreguibery. On the Clemenceau, this system has three main functions: establishment of a situation based on information from external sources (land-based radars, aircraft, ships); dissemination of those data to the ship and to other ships; and assistance in decision making. The ship was equipped with a closed-circuit television system that displays needed information in interested parts of the ship: flight-deck control, the combat operations center, the ready rooms, the air operations office. To operate the Super Étendard, the Clemenceau has been fitted with a central inertial guidance system that transfers information to the inertial guidance system in each plane. Her magazines have been modified to carry AN-52 tactical nuclear weapons. The Foch underwent a similar overhaul 15-7-80 to 4-12-81, receiving SENIT 2 from the inactivated destroyer Tartu.

Clemenceau is in refit 9-85 to 9-86 to improve sensor and defensive systems, including the substitution of two Crotale EDIR systems for four of the 100-mm guns. Foch will be modernized to a similar standard beginning in 1987. Both received Syracuse SATCOMM systems during refits ending in 1984.

♦ 1 helicopter-carrier and cadet training ship

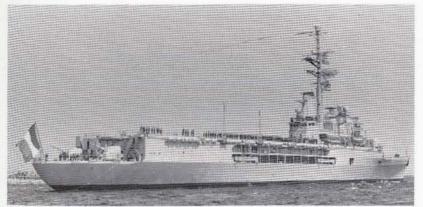
Budget Bldr Laid down L In serv.

R 97 JEANNE D'ARC 1957 Brest Ars. 7-7-60 30-9-61 30-6-64 (ex-La Résolue)



Jeanne d'Arc (R 97) - at end of refit

Pradignac & Leo, 26-4-84



Jeanne d'Arc (R 97)

Pradignac & Leo, 26-4-84

D: 10,000 tons (12,365 fl) **S:** 26.5 kts (cruising) **Dim:** $182.0 (172.0 \text{ wl}) \times 24.0 \times 22.0 (\text{wl}) \times 6.6 (7.3 \text{ aft)}$

A: 6/MM 38 Exocet — 4/100-mm DP Model 1953 (I × 4) — 8 helicopters (see Remarks)

Electron Equipt: Radar: 1/DRBV 22D, 1/DRBV 50, 1/DRBN 32, 3/DRBC 32A Sonar: SQS-503—TACAN: SRN-6 EW: 2 Syllex RL (VIII × 2)

M: 2 sets Rateau-Bretagne GT; 2 props; 40,000 hp Electric: 4,400 kw Boilers: 4 asymmetric, multitube, 45 kg/cm²—superheat 450°C Fuel: 1,360 tons Range: 3,000/26.5; 3,750/25; 5,500/20; 6,800/16 Man: Ships company: 31 officers, 182 petty officers, 414 other enlisted

Remarks: Replaced the former cruiser Jeanne d'Arc as a training ship for officer cædets; when on this mission, she carries only four Super Frélon heavy helicopters. In war-

time, she would be used for ASW missions, amphibious assault, or as a troop transport. The number of heavy helicopters embarked can be quickly augmented by simple structural changes.

Aviation facilities include: a 62×21 -m flight deck aft of the island structure, which permits the simultaneous takeoff of two Super Frélon helicopters, while two machines can be stationed forward of the takeoff area and two others astern, one on each side of the elevator. An elevator (12-ton capacity) is located at the after end of the flight deck.

The hangar deck can, if some of the living quarters used by midshipmen are removed, accommodate eight helicopters. At the after end of the hangar deck there are machine shops for maintenance and repair, including helicopter electronic equipment and an area for inspection. The compartments for handling weapons and ammunition (torpedoes, missiles, etc.) are there also.

In addition to the navigation bridge, the superstructure contains a helicopter-control bridge, a modular-type information-and-operations center, and a combined control center for amphibious operations. Two LCVP landing craft are carried.

The engineering spaces are divided into two compartments, each with two boilers and a turbine, separated by a bulkhead.

The Jeanne d'Arc was in refit during 1983-84; the DRBI 10 height-finding radar was removed. The SENIT-2 data system is now to be installed in 1989-90.

NAVAL AVIATION

The Naval Air establishment is made up of combatant flotillas, maintenance squadrons or sections, bases, schools, and the special services necessary to ensure the efficient operation of the flight components.

Administration is handled by the Aeronautical Division of the Naval General Staff and the Central Service Branch of Naval Air, both headed by flag officers. Operational and training matters are directed by the Navy Staff, whose various bureaus include aviation officers.

Primary training in fixed-wing planes is provided by the Air Force; helicopter pilots are given initial training by the Army as well as the Air Force. Specialization of pilots in multi-engine aircraft or in carrier-based fixed-wing and rotary aircraft is provided by Naval Air. The latter also trains navigators and maintenance crews at the Naval Air School, Rochefort.

The combat flotillas are:

(a) those embarked which, flying from aircraft carriers or helicopter carriers, carry out intercept, attack, reconnaissance, or CAP missions and engage in antisubmarine warfare:

(b) maritime patrol flotillas and antisubmarine warfare flotillas that are land-based. The service support squadrons and sections have various missions: schools, training exercises, transportation, logistical support for seagoing forces, experimental and salvage operations.

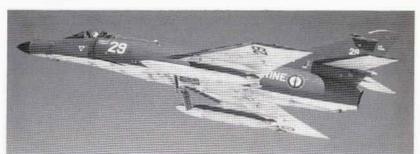
Authority over embarked flotillas and squadrons is assigned to a rear admiral, commander, aircraft carriers and seagoing aviation (ALPA).

Maritime patrol squadrons are commanded by a rear admiral (ALPATMAR).

Shore-based flotillas, squadrons, and sections are commanded by the Préfets Maritimes (Naval District Commandants) through the regional aviation commanders.

Bases: Nîmes-Garon, Saint-Mandrier (helicopters), Saint-Raphaël (experimental station), Hyères, Cuers (maintenance), Ajaccio-Aspretto (training), Lorient-Lann Bihoué, Lanvéoc-Poulmic (helicopters), Landivisiau.

For training, the French Navy uses at its schools Étendard IVM, Alizé, Nord 262, C-47, CM-175, Alouette-II, and Rallye 880 aircraft. Support organizations employ MS 760, Nord 262, Rallye 880, C-47, C-54, CM-175, Falcon 10, and Piper Navajo aircraft and Alouette-II, Alouette-III, Lynx, and Super Frélon helicopters. A total of 71 Super Étendard attack aircraft were ordered; all were operational by 1982; but 5 were loaned to Iraq in 9-83 and returned in 9-85, and one has been lost.



Super Étendard

J. M. Guhl, 1984



Super Étendard-with AM-39 missile

NAVAL AVIATION (continued)

FIRST-LINE OPERATIONAL COMBAT ORGANIZATIONS

| Flotilla | Subordination | Bases | Equipment | Missions |
|----------|---------------|----------------------------|--------------------|--------------------------|
| 4 F | ALPA | Lann-Bihoué | 8 Alizé | ASW/AEW |
| 6 F | ALPA | Nîmes-Garons | 8 Alizé | ASW/AEW |
| 11 F | ALPA | Landivisiau | 12 Super Étendard | Attack |
| 12 F | ALPA | Landivisiau | 12 Crusader (F-8E) | Interception |
| 14 F | ALPA | Landivisiau | 14 Super Étendard | Attack |
| 16 F | ALPA | Landivisiau | 8 Étendard IV P | Reconnaissance |
| 17 F | ALPA | Hyères | 12 Super Étendard | Attack |
| 21 F | ALPATMAR | Nîmes-Garons | 7 Atlantic Mk 1 | Maritime patrol |
| 22 F | ALPATMAR | Nîmes-Garons | 7 Atlantic Mk 1 | Maritime patrol |
| 23 F | ALPATMAR | Lann-Bihoué | 7 Atlantic Mk 1 | Maritime patrol |
| 24 F | ALPATMAR | Lann-Bihoué | 7 Atlantic Mk 1 | Maritime patrol |
| 31 F | ALPA | St. Mandrier | 12 WG-13 Lynx | ASW |
| 32 F | ALPA | Lanvéoc-Poulmic | 5 Super Frélon | ASW & troop transport |
| 33 F | ALPA | St. Mandrier | 7 Super Frélon | Troop transport |
| 34 F | ALPA | Lanvéoc-Poulmic | 9 WG-13 Lynx | ASW |
| 35 F | ALPA | Jeanne d'Arc or | 2 WG-13 Lynx | |
| | | Lanvéoc- Poulmic | 4 Alouette-III | |
| 12 S | ALPATMAR | Faaa, Tahiti | 3 Gardian | Maritime patrol |
| 4 S | ALPATMAR | Tontouta, New Caledonia | 2 Gardian | Maritime patrol |

A new ACM (Avion de Combat Marine) fighter-bomber to replace the Super Étendard in the late 1990s is in the planning stages. A flight-demonstrator prototype, the Rafale (ACX) is expected to fly in 1986, powered by two G.E. F404 engines; the production aircraft would be powered by two SNECMA M88 engines of 7,500-lb thrust each. A total of 42 Atlantique MK 2 patrol aircraft are planned, 16 in the 1984-88 Plan. The

A total of 42 Atlantique MK 2 patrol aircraft are planned, 16 in the 1984-88 Plan. The prototype was completed in mid-1981, but the first production aircraft is not expected to fly before 1988.



Étendard-IVM — now used only for training



F-SE Crusader



Alizé



Gardian (Falcon 20)

French Navy, 1984



Super Frélon



Alouette-III



Atlantique Mk 2 prototype



WG-13 Lynx

NAVAL AVIATION (continued)



Atlantic Mk 1



Xingu multi-engine trainer

French Navy, 1983

| Type | Mission | Wingspan | Length | Height | Weight (max.) kilos | Engine | Max. speed in Mach or in knots | Maximum ceiling | Range | Weapons | Remarks |
|---|--|------------------------------|--------|--------|---------------------------|---|---|--------------------|---|---|--|
| * SHIP-BASED PLANES CRUSADER F8-E (FN) (Ling-Temco- Vought) SUPER-ÉTEN- | All-weather in- terceptor | 10.72 | 16.61 | 4.80 | 13,000 | 1 J57 P20 A Pratt & Whitney turbojet with after-burner | Mach 1.8 | 50,000 ft | 1,500 miles 2 hr 30 min | 4/20-mm guns, M 530 air-to- air missiles | (1) 2 Flotilles are modified to carry the ANT 52 nu- clear bomb. (2) 28 to 34 Alizé aircraft were modernized 1980-84 with Iguane radar, Omega radio-navigation equip- ment, and ARAR 12-A intercept gear. |
| DARD (Dassault) (1) | Fleet air de- fense attack, | 9.60 | 14.35 | 3.85 | 11,900 | 1 8 K 50 SNECMA turbo- jet developing 5 tons of thrust | Mach 1 at 11,000 m; Mach 0.97 at low alti- tude | | | 2/30-mm guns, bombs, rockets, or one AM 39 | (3) Can be outfitted with a small photo pod for recon- naissance missions. The Atlantique Mk 2, which will enter service in 1989 will have the same airframe, engines, and charac- teristics as the Mk I but its weapon system will be |
| Étendard-IVP (Dassault) | Photo- reconnais- sance | 9.60 | 14.50 | 3.85 | 10,200 | 1 SNECMA Atar 8 turbo- jet | Mach 1.3 | 35,000 ft. | 750 miles 1 hr 45 or 2 hr 15 with supplemental reserve tank | 100-mm rockets, 68-mm rockets, photo-flash bombs flash bombs | entirely new, built around a Type 15 M digital tacti- cal computer. It will be able to transport 3 tons of weapons, e.g., 4 Martel under the wings or 2 AM 39 inboard, 32 aircraft will be procured. |
| Alizé (BR 1050) (Bréguet) (2) | AEW, ASW | 15.60 | 13.66 | 5 | 8,200 | 1 Rools-Royce Dart 21 turboprop (1,925 hp + 230 kt of thrust) | 240 kts | 11,000 ft | 685 miles 3 hr 45 | Air-to-surface missiles, Mk 46 torpedoes, 100-mm rockets, ASW depth charges 50 to 250 kg bombs, acoustic buoys, mortar- | (4) Localization, classification and attack of contacts picked up by an antisubmarine ship. Carries DUAV-4 dipping sonar. (5) Detection, identification, and neutralization of small surface vessels with weak antiaircraft de- |
| * LAND-BASED | | | | | | | | | | type projectiles | fense. 4 equipped with MAD for ASW. |
| PLANES Gardian (Bréguet) | Maritime surveillance, search & | 16.3 | 17.15 | 5.32 | 15,200 | 2 Garrett ATF3 turbo jets | Mach 0.86 | 42,000 ft | 2,200 n. miles 5 hr 30 min | Varan radar, ventral chuté to launch rescue gear | |
| Atlantic Mk 1 (Br 1150) (Bréguet) (3) | Patrol, ASW (2) | 36.30 | 31.75 | 11.33 | 43,500 | 2 Rolls-Royce Tyne 20 turboprops, 6,000 hp each | 300 kts | 30,000 ft | 4,300 miles 17 hr | Air-to-surface missiles, L 4 or Mk 46 torpedoes, ASW depth charges, sonobuoys, mortar-type projectiles (ASW), photo-flash bombs | |
| * HELICOP- TERS | | | | | | | | | | | |
| Super Frélon (S.N.I.A.S.) | ASW (2 used as transports) | 18.90 (rotor diameter) | 23 | 6.35 | 13,000 | 3 C3 Turboméca III turbo- shafts, each with 1,500 hp | 145 kts | 10,000 ft | 420 miles 3 hr 30 min | Mk 46 ASW torpedoes | |
| Lynx (WG-13) (Westland S.N.I.A.S.) (4) | ASW (3) and surface at- tack aircraft (4) | 12.80 (rotor diameter) | 15.2 | 3.20 | 4,150 | 2 BS 360 Rolls-Royce Gem turboshafts, of 900 or 750 hp each | 150 kts | 12,000 ft | 1 hr 30, half hov- ering, half in flight 2 hr 30 min with 3 men and 4 | Mk 46 torpedoes, air-to- surface missiles | |
| Alouette-III (S.N.I.A.S.) (5) | ASW (6) | 11.02 (rotor diameter) | 12.8 | 3.0 | 2,200 | 1 Turbomeca Astazou tur- boshaft, 870 hp | 110 kts | 10,000 ft | missiles 325 miles 2 hr 30 min | Mk 46 torpedoes | * |

Note: Other aircraft in service include Nord 262, PA-31, 5 Falcon 10 Sea, 8 MS 760, 6 Rallye 800, Alouette-II, C-47, 12 CM 175 Magister, and 6 CAP 10 for training and support duties. 16 Embraer Xingu were delivered 1982-83 from Brazil to replace the Nord 262 as a multi-engine trainer.

BALLISTIC-MISSILE SUBMARINES

General Note for Submarines: Names and pendant numbers ceased to be displayed on 1-1-83, to augment security.

Note: The seventh SNLE (Sous-marin nucléaire Lance Engins) has been delayed somewhat from the schedule originally announced by President Mitterand on 24-7-81. The 14-15,000-ton ship is now scheduled to be laid down at DCAN, Cherbourg, at the end of 1988, for an operational date of 1994. The ship will be powered by a new nuclear-propulsion plant, the 131-megawatt K15, also to be used in the new nuclear-powered aircraft carriers.

1 L'Inflexible class

 Bldr
 Laid down
 L
 In serv.

 S 615 L'Inflexible
 DCAN, Cherbourg
 27-3-80
 23-6-82
 1-4-85

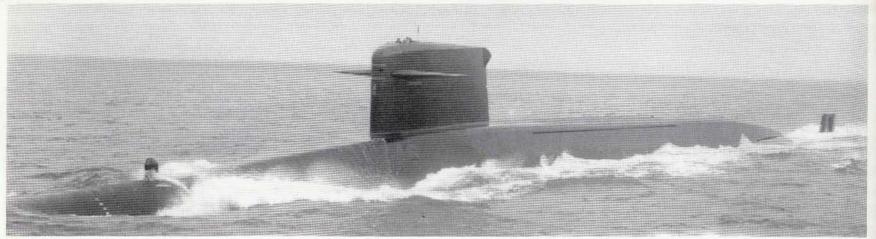
D: 8,080/8,920 tons S: over 20 kts (sub.) Dim: $128.70 \times 10.60 \times 10.00$ A: 16/M 4 ballistic missiles — 4/533-mm TT fwd (12 torpedoes or SM 39 missiles)

Electron Equipt: Radar: DRUA 33—EW: radar detector Sonar: DSUX 21 multifunction, DUUX5

M: 1 pressurized-water reactor, 2 steam turbines; turbo-reduction drive; 1 prop; 16,000 hp — electric emergency propulsion with 5,000 n.m. range
Man: 2 crews in rotation, each of 15 officers, 120 men

Remarks: Ordered 9-78, L'Inflexible has most characteristics in common with the five preceding SSBNs of Le Redoutable class, but takes advantage of many technological advances in propulsion, sonar systems, navigation systems, etc., and is able to dive 100 m deeper. The ship will be equipped from the outset with the M 4 missile, which will have six TN-70 Multiple Independent Re-entry Vehicle (MIRV) warheads. Sail planes higher on more streamlined sail than in Le Redoutable class.

BALLISTIC-MISSILE SUBMARINES (continued)



L'Inflexible (S 615)

J. Biaugeaud, 1985



L'Inflexible (S 615)

J. Biaugeaud, 1985

| ♦ 5 nuclear-powered I | s Bldr: l | Bldr: DCAN, Cherbourg | | |
|-----------------------|-----------|-----------------------|--------|----------|
| | Laid down | L | Trials | In serv. |
| S 611 LE REDOUTABLE | 11-64 | 29-3-67 | 7-69 | 1-12-71 |
| S 612 LE TERRIBLE | 22-6-67 | 12-12-69 | 1971 | 1-1-73 |
| S 610 LE FOUDROYANT | 12-12-69 | 4-12-71 | 5-73 | 6-6-74 |
| S 613 L'Indomitable | 4-12-71 | 17-9-74 | 12-75 | 23-12-76 |
| S 614 LE TONNANT | 10-74 | 17-9-77 | 4-79 | 3-4-80 |



Le Terrible (S 612)

E.C.P.A., 1978



Le Foudroyant (A 610)

L. & L. Van Ginderen, 2-83

D: 8,000/9,000 tons S: 20 kts, max. Dim: $128.0 \times 10.6 \times 10.0$ A: 16 M 20 ballistic missiles—4/550-mm TT fwd (18 L 5 and F 17 torpedoes) Electron Equipt: Radar: 1/DRUA 33—EW: radar detector

Sonar: 1/DUUV-23, 1/DUUX-2

M: Principal: 1 pressurized water reactor, 2 steam turbines with 1 set turboreduction gears; 1 prop; 16,000 hp

Secondary: 1 electric motor driven by batteries powered by 1 SEMT-Pielstick 16 PA4, 850-kw diesel generator set (sufficient fuel for 5,000 n.m.) Man: Twin crews of 15 officers and 120 men for each ship, manning in rotation

Remarks: Le Redoutable (authorized in March 1963) and other submarines of this class are the principal elements of the French naval deterrent. They can dive more than 200 meters. All, with the exception of Le Redoutable, will be back-fitted to carry the M 4 missile. The substitution will not require replacing the existing missile tubes. The sonar suit will be upgraded by the installation of DSUX-21, and other equipment will be modernized. S 614 began modernization 1-2-85 at Cherbourg.

1 experimental ballistic-missile submarine (non-nuclear)

Laid down Bldr I. In serv. S 655 GYMNOTE DCAN, Cherbourg 17-3-63 17-3-64 17-10-66



Gymnote

J.-C. Bellonne, 1977

D: 3,000 tons std., 3,250 surfaced (fl) S: 11/10 kts Dim: 84.0 × 10.6 × 7.6 M: 4 sets 620-kw diesel generators; 2 electric motors; 2 props; 2,600 hp Man: 8 officers, 38 petty officers, 45 other enlisted

Remarks: Used for testing missiles designed for the SSBNs. Has two vertical missilelaunching tubes to port. Bow diving planes do not retract. Noncombatant. Currently involved in M 4 developmental trials. The pressure hull was laid down in 1958 for a nuclear-powered attack submarine that was canceled in 1959. To be stricken 1986.

NUCLEAR-POWERED ATTACK SUBMARINES

| ♦ 0 (+1+2) "Post-Rubis" class | | Bldr: Cherbo | | | |
|-------------------------------|---|--------------|---------|-----------|----------|
| | | Laid down | L | Trials | In serv. |
| S 605 | N | | * (* *) | 18 (8/18) | |
| S 6 | N | | | 0.00 | K (# K) |
| S | N | * * * | * * * | | |

D: . . . S: . . . Dim: . . . × . . . × . . .

Electron Equipt: . . .

M: 148-megawatt natural circulation, pressurized water reactor; 2 turboalternator sets; 1 electric motor; 1 prop; 9,500 hp-emergency backup system: 200 kw

Endurance: 90 days Man: . . .

Remarks: S 605 ordered 17-10-84. Will employ all improved, body-of-revolution hull form. Will have two crews, improved combat data, sensor, and communications systems. Second and third to order 1986, 1988.

NUCLEAR-POWERED ATTACK SUBMARINES (continued)

| ♦ 2 (+2) Rubis clas | s, Type SNA 7 | 2 Bld | r: DCAN, (| Cherbourg |
|-------------------------------|---------------|----------|------------|-----------|
| | Laid down | L | Trials | In serv. |
| S 601 Rubis (ex-Provence) | 11-12-76 | 7-7-79 | 1-4-81 | 23-2-83 |
| S 602 SAPHIR (ex-Bretagne) | 1-9-79 | 1-9-81 | 1-7-83 | 6-7-84 |
| S 603 CASABIANCA | 9-81 | 22-12-84 | 4-86 | 4-87 |
| S 604 N | 10-82 | | 10-87 | 11-88 |
| S 605 N | 11-10-84 | 2 | 10-89 | 10-90 |



Saphir (S 602)

G. Gyssels, 2-85



Saphir (S 602)

J. Pradignac, 5-85

D: 2,265 std. 2,385 surf. 2,670 tons sub. S: 25 kts Dim: 72.10 × 7.60 × 6.40

A: 4/533-mm TT fwd (14 torpedoes, SM 39 missiles, or mines) Electron Equipt: Radar: 1/DRUA 33—EW: ARUR, ARUD

Sonar: 1/DSUV 22, 1/DUUA 2B, 1/DUUX 2

M: Principal: 1 48-megawatt pressurized water reactor; two turbo alternator sets; 1 electric motor; 1 prop; 9,500 hp

Secondary: 1 electric motor driven by batteries powered by 1 SEMT-Pielstick 16PA4, 85C-kw diesel generator set

Endurance: 45 days Man: 9 officers, 35 chief petty officers, 22 other enlisted

Remarks: Names for the first two changed 11-80. Fire-control, torpedo-launching, and submarine-detection systems are the same as for the Agosta class. Rubis was financed under the Third Military Equipment Plan. The second through the fourth came under the Fourth Plan (1977-82). Saphir was ordered under the 1977 budget, the third under the 1979 budget, and the fourth in 1981. Rubis's reactor became operational (went critical) early 2-81, and trials started 6-81. S 602 the first to carry the SM 39 Exocet missile. All have the Pivair optronic periscope and employ the SADE automated combat data system. Diving depth: 300 m.

ATTACK SUBMARINES

• 4 Agosta class Bldr: Cherbourg Arsenal

| | Laid down | L | In serv. |
|-----------------|-----------|----------|----------|
| S 620 Agosta | 10-11-72 | 19-10-74 | 28-7-77 |
| S 621 Bévéziers | 17-5-73 | 14-6-75 | 27-9-77 |
| S 622 La Praya | 1974 | 15-5-76 | 9-3-78 |
| S 623 OUESSANT | 1974 | 23-10-76 | 27-7-78 |

D: 1,230/1,490/1,740 tons (fl) S: 12.5 kts/20.5 kts for 5 min., 17.5 kts for 1 hr. **Dim:** $67.57 \times 6.8 \times 5.4$

A: 4/550-mm TT fwd - 20 L 5 Mod. 3 and F 17 torpedoes (rapid loading)

Electron Equipt: Radar: 1/DRUA 33 - EW: ARUR, ARUD

Sonar: 1/DUUA 1D, 1/DUUA 2A, 1/DUUA 2D, 1/DSUV 22, 1/DUUX 2A

M: 2 SEMT-Pielstick 320-16 PA 4 185 diesel generator sets (850 kw each); 1 × 3,500-kw propulsion motor; 1 prop; 4,600 hp (1 × 23-hp creep motor)

Fuel: 185 tons Endurance: 45 days Man: 7 officers, 47 men Range: 7,000/10 (snorkel); 178/3.5 (creep motor), 7,900/. . . surf. (1 engine)

Remarks: Oceangoing submarines, authorized in the 1970-75 program. Weapons and equipment similar to the refitted Daphné class. DLA D3 fire control centralized in one computer bank. Air-conditioned. Retractable deck fittings on hull exterior. Advanced techniques for quiet operations both inboard and outboard. The torpedo tubes accept torpedoes of either 550-mm or 533-mm diameter. S 621 used in SM 39 Exocet trials. 320-cell battery with twice the capacity of the Daphné class. Diving depth 300 m. To be equipped to fire SM 39 guided missiles. Spain built four of this class of submarine, and Pakistan has two-from an embargoed South African order.



Bévéziers (S 621)

L. & L. Van Ginderen, 1-85



La Praya (S 622)

Pradignac & Leo, 6-84

9 Daphné class

| | Budget | Bldr | Laid down | L | In serv. |
|---------------|--------|------------------|-----------|----------|----------|
| S 641 Daphné | 1955 | Dubigeon, Nantes | 3-58 | 20-6-59 | 1-6-64 |
| S 642 DIANE | 1955 | Dubigeon, Nantes | 7-58 | 4-10-60 | 20-6-64 |
| S 643 Doris | 1955 | Cherbourg Ars. | 1-9-58 | 14-5-60 | 26-8-64 |
| S 645 FLORE | 1956 | Cherbourg Ars. | 1-9-58 | 21-12-60 | 21-5-64 |
| S 646 GALATÉE | 1956 | Cherbourg Ars. | 1-9-58 | 22-9-61 | 25-7-64 |
| S 648 Junon | 1960 | Cherbourg Ars. | 7-61 | 11-5-64 | 25-2-66 |
| S 649 Vénus | 1960 | Cherbourg Ars. | 8-61 | 24-9-64 | 1-1-66 |
| S 650 Psyché | 1964 | Brest Arsenal | 5-65 | 28-6-67 | 1-7-69 |
| S 651 SIRÈNE | 1964 | Brest Arsenal | 5-65 | 28-6-67 | 1-3-70 |



Doris (S 643)

M. Bar, 6-84



Diane (S 642)

Maritime Photographic, 10-85

D: 700 std./869 surf./1,043 sub. tons S: 13.5/16 kts Dim: 57.75 × 6.76 × 5.25 (max.)

A: 12/550-mm TT, 8 fwd, 4 aft (no reloads)

Electron Equipt: Radar: 1/Calypso II

Sonar: 1/DUUA 2B, 1/DSUV 2, 1/DUUX 2

M: 2 SEMT-Pielstick/Jeumont-Schneider 450-kw diesel generator sets; $2\times1,\!000$ hp (1,300 for a brief period) electric motors; 2 props—see Remarks

Range: 4,300/7.5 (snorkel) Man: 6 officers, 39 men

Remarks: Development of the Aréthuse class. Very quiet when submerged. Modernized, beginning in 1971, with special attention given to detection equipment and weapons. S 650 and S 651 were the last modernized, in 1981. S 641, not fully modernized, does not have the large bow sonar dome. Can submerge to 300 meters. Have DLT D3 torpedo fire-control system. The first seven have Type 12 PA1 diesels, while S 650 and S 651 use Type 12 PA4-135. This class of submarine has been purchased by the following countries: Portugal, four in 1964; Pakistan, four in 1966, South Africa, three in 1967. Spain has built four with French technical assistance. One Portuguese unit was sold to Pakistan in 1976. S 651 flooded and sank 11-10-72 but was salvaged; sisters Minerve (S 647) and Eurydice (S 644) lost 27-1-68 and 4-3-70. Six will reportedly strike by 1988.

ATTACK SUBMARINES (continued)

2 Narval class

Bldr Laid down Budget In serv. Cherbourg Ars. 17-9-55 S 633 DAUPHIN 1950 5-52 1-8-58 2-5-60 2-56 S 638 MORSE 1954 Seine Maritime 10-12-58

D: 1,320/1,635/1,910 tons S: 15/18 kts Dim: 77.63 × 7.82 × 5.40

A: 6/550-mm TT fwd - 20 torpedoes

Electron Equipt: Radar: 1/search, 1/attack

Sonar: DUUA 1, DSUV 2, DUUX 2

M: 3 SEMT-Pielstick 12 PA4 motor generator sets; 2 electric motors; 2 props;

3,000 hp (2×40 -hp creep motors)

Endurance: 45 days Range: 15,000/8 (snorkel) Man: 7 officers, 57 men

Remarks: Rebuilt from 1966 to 1970; re-engined, with complete modernization of detection devices and weapons. Separate fixed-pitch bow planes are extended to rise or descend. Requin, modified 1980 for trials with the SM 39 submerged-launch missile, discarded 11-85. Marsouin (S 632) decommissioned 8-11-82 for cannibalization; Narval (S 631), which had a special swimmer-delivery vehicle housing on deck aft, stricken spring 1983. S 638 to strike 1986. S 633 is used in trials of materials and equipment for future submarines.

GUIDED-MISSILE CRUISER

Budget Bldr Laid down In serv. C 611 COLBERT 1953 12-53 24-3-56 Brest 5-5-59

D: 8,500 tons (11,300 fl) S: 31.5 kts

Dim: $180.80 (175.00 \text{ pp}) \times 20.20 (19.70 \text{ wl}) \times 7.90 (\text{max.})$

A: 4/MM 38 Exocet - 1/Masurca SAM syst. (II × 1, 48 missiles) - 2/100-mm DP, Model 1968 (I \times 2) – 12/57-mm AA (II \times 6)

Electron Equipt: Radar: 1/DRBN 32, 1/DRBV 50, 1/DRBV 23C, 1/DRBV 20C, 2/DRBR 51, 1/DRBR 32C, 2/DRBC 31, 1/DRBI 10D

EW: ARBB 31, ARBB 32, ARBR 10F, 2/Syllex countermeasures RL—TACAN: URN-20 M: 2 sets C.E.M. Parsons GT; 2 props; 86,000 hp Electric: 4,920 kw

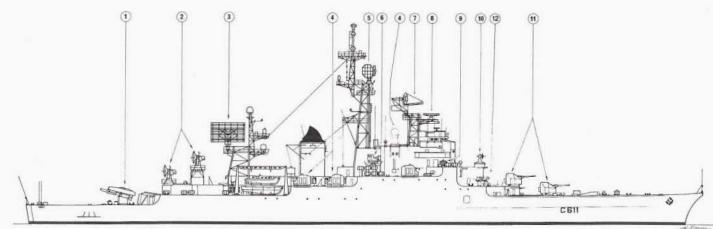
Boilers: 4 asymmetric, multitube; 45 kg/cm², 450°C Range: 4,000/25

Man: 25 officers, 208 petty officers, 329 men Armor: Deck: 50 mm, Belt: 50 to 80 mm



Colbert (C 611)

J. Pradignac, 1984



Colbert 1. Masurca twin launcher 2. DRBR 51 Masurca tracker/illuminator radars 3. DRBV 20C early-warning radar 4. twin 57-mm AA mounts 5. DRBI 10D height-finding radar 6. DRBC 31 radar director for 57-mm AA 7. DRBV 23C stabilized air-search radar 8. DRBV 50 surface/air-search radar 9. Syllex chaff RL (VIII × 2) 10. DRBC 32C radar director for 100-mm guns 11. 10-mm Model 1968 dual-purpose guns 12. MM 38 Exocet launch cells (Note that the forward arrow marked "4" points to the Syracuse SATCOMM antenna radome rather than the forwardmost 57-mm AA mount.)



GUIDED-MISSILE CRUISER (continued)

Remarks: Converted into a surface-to-air guided-missile cruiser between 4-70 and 10-72. The SENIT 1 tactical data system enables real-time control of the surface and air situation at the center of a widely dispersed formation, making this an excellent command ship, able also to coordinate the air defense of the formation. The ship can be used as a command post for an interservice operation overseas. During the 1970-72 refit the bridge superstructure was rebuilt, the electronic equipment for command and control was modernized, the electric power increased, and living spaces were improved, including air-conditioning. Four MM 38 Exocet anti-ship missiles were installed in 1980. In addition to the two DRBR 31 radar directors for the 57-mm AA guns, there are also four lead-computing visual directors. Machinery and boilers are installed in two separate compartments, each with two boilers and a turbine, separated by an 18-meter-long watertight compartment. Refitted 9-81 to 11-82, during which the Syracuse satellite communications system was fitted and the Masurca system updated. Scheduled for disposal in 1997.

GUIDED-MISSILE DESTROYERS

♦ 0 (+4) Cassard (C 70 AA) class

| | Bldr | Laid down | L | In serv. |
|---------------|---------------|-----------|--------|----------|
| D 614 Cassard | DCAN, Lorient | 3-9-82 | 6-2-85 | 3-88 |
| D JEAN BART | DCAN, Lorient | 5-84 | 1986 | 3-90 |
| D COURBET | DCAN, Lorient | 5-86 | 1989 | 1991 |
| D N | DCAN, Lorient | 5-87 | | 1992-3 |

D: 3,820 tons (4,340 fl) S: 29.6 kts Dim: 139.00 (129.00 pp) \times 14.00 \times 5.50 A: 8/MM40 SSM - 1/Mk 13 launcher (40 Standard SM-1 MR missiles) - 2/SADRAL systems (VI \times 2) - 1/100-mm DP - 2/20-mm AA (I \times 2) - 2 fixed catapults for Type L-5 ASW torpedoes (10 torpedoes) - 1/light helicopter

Electron Equipt: Radar: 2/Decca 1229, 1/DRBJ 11B, 1/DRBV 26, 2 SPG-51C, 1/DRBC 33

Sonar: 1/DUBA 25A—IR: DIBV 10 Vampir EW: ARBB 33, ARBR 17, 2 Dagaie and 2 Sagaie countermeasures RL

M: 4 SEMT-Pielstick 18 PA 6 BTC diesels; 2 props; 42,300 hp Electric: 3,400 kw Fuel: 600 tons Range: 4,800/24; 8,000/17 Man: 12 officers, 124 petty officers, 105 men (251 accomm.)

Remarks: 1977-82 program; the first was authorized under the 1978 budget, the second under the 1979 budget, and the third and fourth in 1983.

The Mk 13 launchers and missile fire-control systems are being taken from the four Kersaint (converted T-47)-class destroyers. The design has been recast, with a second 100-mm mount aft being replaced by a helicopter shelter for a small, AS.15 missile-equipped helicopter, flanked on either side by launchers for SADRAL system short-range point-defense missiles. After the second unit, the forward Model 1968 100-mm gun will be replaced by the new "Compact" model. The space beneath the helicopter deck may eventually accommodate the DSBV 61 towed linear passive hydrophone

array. The ships will have the SENIT 6 digital data system, and the new DRBC 33 radar fire-control director will be aided by a Piranha III t.v./laser attachment. Also installed will be 2 CSEE Lynx and 2 Naja optronic directors. A SAMAHE deck traversing system will be fitted for the helicopter. Provision has been made for installing the DSBV 61 towed passive linear hydrophone array. The Model 1968 gun will have a 78 rd/min firing capability.

| ♦ 4 (+3) Georges Leygues (C 70 ASW) class | | | Bldr: Brest Arsenal | |
|---|-----------|----------|---------------------|--|
| | Laid down | L | In serv. | |
| D 640 Georges Leygues | 16-9-74 | 17-12-76 | 10-12-79 | |
| D 641 Dupleix | 17-10-75 | 2-12-78 | 16-6-81 | |
| D 642 Montcalm | 5-12-75 | 31-5-80 | 28-5-82 | |
| D 643 Jean De Vienne | 26-10-79 | 17-11-81 | 25-5-84 | |
| D 644 PRIMAUGUET | 19-11-81 | 17-3-84 | 1987 | |
| D 645 LA MOTTE-PICQUET | 9-2-82 | 6-2-85 | 1988 | |
| D 646 N | 2-84 | | 1990 | |

D: 3,830 tons (4,170 fl) S: 30 kts (GT), 21 kts (diesels)

Dim: 139.00 (129.00 pp) × 14.00 × 4.10 (hull); 5.73 (props); 5.50 (sonar) A: 4/MM 38 Exocet (D 642 and later: 4 or 8 MM 40) — 1/Crotale system

(VIII \times 1; 26 missiles) -1/100-mm DP, Model 1968 -2/20-mm AA (I \times 2) -2 catapults for L-5 ASW torpedoes (10 torpedoes) -2/WG-13 Lynx helicopters Electron Equipt: D 640-643: Radar: 2/DRBN 32 (Decca 1226), DRBV 26,

DRBV 516C, 1/DRBC 32D Sonar: DUBV 23 hull-mounted; DUBV 43B VDS EW: ARBR 16, ARBR 11B (D/F), ARBB 32,

2/Syllex (D 643: Dagaie) countermeasures RL D 644-646: Radar: 2/DRBN 32 (Decca RM 1226), DRBV 15A, 1/DRBC 33 with optronics

15A, 1/DRBC 33 with optronics Sonar: DUBV 24C hull-mounted, DUBV 43B VDS, DSBV 61 towed array

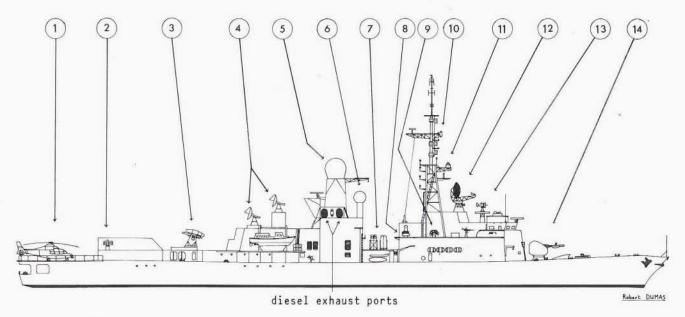
EW: ARBR 17, HF monitoring syst, 2/Dagaie RL

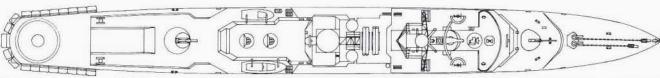
M: CODOG: 2 Rolls-Royce Olympus TM3B gas turbines; 2 SEMT-Pielstick 16 PA 6 CV 280 diesels; 2 CP props; 52,000 hp (gas turbine), 10,400 hp (diesel) Electric: 3,400 kw (4 × 850-kw alternator sets) Fuel: 600 tons distillate Range: 1,000/30; 9,500/17 diesels

Man: Peacetime: 18 officers, 127 petty officers, 83 men (accommodations for 250 total)

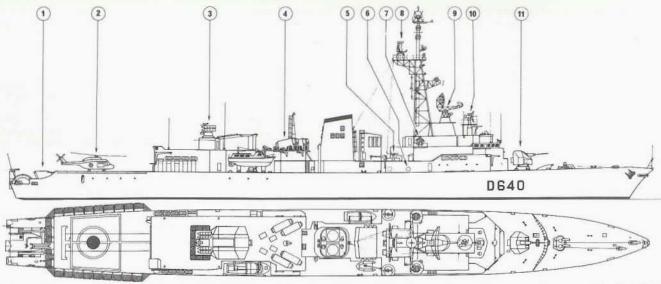
Remarks: Units 6 and 7 built at Brest and fitted out at Lorient Dockyard. Main propulsion and auxiliary equipment is divided among four compartments from forward to aft: forward auxiliary room, turbine room, diesel room with the reduction gears, and after auxiliary room. On diesel power and with the DUBV 43 sonar in the water, maximum speed is 19 knots. Centralized control of the propulsion machinery from the bridge greatly reduces the engineering staff required (3 officers, 23 petty officers, 24 men).

As in the *De Grasse*, much attention has been given to habitability, which caused the addition of 5 meters of length and 150 tons to the original plans. Denny Brown automatic stabilizers fitted. Have SENIT 4 data system. Dagaie rocket launchers





C 70 AA class 1. small helicopter 2. SADRAL launcher (VI × 2) 3. Mk 13 missile launcher for Standard SM-1 MR 4. SPG-51C tracker/illuminator radars 5. DRBJ 11B 3-D radar 6. Syracuse SATCOMM antennas 7. MM 40 Exocet launch cells 8. Dagaie countermeasures launcher 9. Sagaie countermeasures launcher 10. DIBV 10 Vampir IR system 11. ARBR 17 EW antenna 12. DRBV 26 radar 13. DRBC 33 f.c. radar director 14. 100-mm DP



Georges Leygues 1. DUBV 43 sonar 2. WG-13 Lynx helicopter 3. Crotale launcher 4. Exocet launchers 5. 20-mm AA 6. ASW torpedo catapults 7. Syllex system 8. DRBV 51C radar 9. DRBV 26 radar 10. DRBC 32D radar 11. 100-mm gunmount, Model 1968



Primaguet (D 644) - on trials; note higher bridge

16 Flot., French Navy, 7-85



Georges Leygues (D 640) - with Syracuse

L. & L. Van Ginderen, 3-85

replace Sagaie in D 643 and later ships. Montcalm carries 4/MM 40 SSM now, but this may later be doubled. Have 1 CSEE Panda optronic backup director for the 100-mm gun. The helicopters can be used for ASW with Mk 46 torpedoes or Mk 54 depth bombs or for anti-ship duties with AS-12 missiles.

The final three have a modified sensor suit and the pilothouse placed one deck higher. D 640–643 will eventually have their sonar suits updated to match the others, but will retain the original radars. Beginning with D 694, the Crotale EDIR SAM system is installed. All have the SENIT 4 combat data system and Syracuse SAT-COMM equipment. The DIBV 10 Vampir IR system is to be added.



Dupleix (D 641)

J. Pradignac, 5-85

• 3 Tourville class, Type F 67, ex-C 67A Bldr: Lorient Arsenal

| | Budget | Laid down | L | In serv. |
|---------------------|--------|-----------|----------|----------|
| D 610 Tourville | 1967 | 3-70 | 13-5-72 | 21-6-74 |
| D 611 DUGUAY TROUIN | 1967 | 1-71 | 1-6-73 | 17-9-75 |
| D 612 DE GRASSE | 1970 | 1972 | 30-11-74 | 1-10-77 |

D: 4,800 tons (5,800 fl) S: 32 kts

Dim: 152.75 (142.0 pp) × 15.3 × 5.7 (hull) (6.48 props)

A: 6/MM 38 Exocet — 1/Crotale syst. (VIII × 1, 26 missiles) — 2/100-mm DP, Model 1968 (I × 2) — 2/20-mm AA (I × 2) — 1/Malafon ASW syst. (13 missiles) — 2/catapults for L-5 antisubmarine torpedoes (10 torpedoes — 2/WG-13 Lynx helicopters

Electron Equipt: Radar: 2 DRBN 32 (Decca 1226), 1/DRBV 26, 1/DRBV 51B, 1/DRBC 32D

Sonar: 1/DUBV 23, 1/DUBV 43

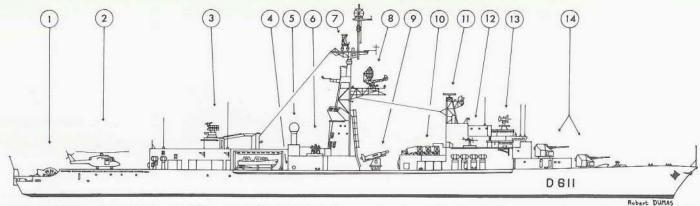
EW: ARBB 32, ARBR 16, 2/Syllex countermeasures RL

M: 2 sets Rateau double-reduction GT; 2 props; 54,400 hp

Electric: 4,440 kw (2 × 1,500-kw turbogenerators, 3 × 480-kw diesel alternators) Boilers: 4 asymmetric, multitube, automatic-control; 45 kg/cm^2 , $450 ^{\circ}\text{C}$

Range: 1,900/30; 4,500/18 Man: 17 officers, 122 petty officers, 143 men

Remarks: SENIT 3 data system fitted. Duguay Trouin was equipped with the Crotale antiaircraft missile system during 1979, Tourville in 1980 and De Grasse in 1981. In preparation for Crotale, the third 100-mm gunmount atop the helicopter hangar on Tourville and Duguay Trouin was removed; it was never carried by De Grasse. During her Crotale installation refit, the Tourville had her boilers converted to burn distillate fuel, which has been burned by De Grasse from the outset. Fin stabilizers are fitted. These ships, particularly De Grasse, have a very high standard of habitability and seakeeping qualities on a par with those of the Suffren class. The Syllex countermeasures launchers are to be replaced by 2 Dagaie systems and the Crotale EDIR missile substituted about 1990.



Duguay Trouin (D 611) 1. DUBV 43 VDS 2. WG-13 Lynx helicopter 3. Crotale SAM system 4. catapults for L5 ASW torpedoes 5. Syracuse SATCOMM antenna radomes 6. Syllex chaff rocket launcher 7. DRBV 51B search radar 8. DRBV 26 early-warning radar 9. Malafon ASW system 10. MM 38 Exocet launchers 11. Decca 1226 nav. radar 12. 20-mm AA 13. DRBC 32D f.c. radar directions of the control o tor 14. 100-mm Model 1968 DP



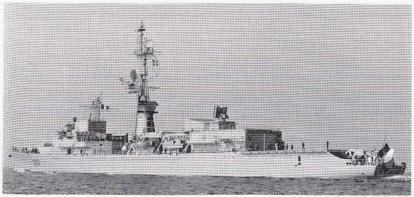
Duguay Trouin (D 611) - with Syracuse aft

16 Flot., French Navy, 1985



Tourville (D 610)

J. Goss, 11-81



De Grasse (D 612)

J. Pradignac, 1984

♦ 2 Suffren class

| | Bldr | Budget | Laid down | L | In serv. |
|----------------|--------------|--------|-----------|---------|----------|
| D 602 Suffren | Lorient Ars. | 1960 | 12-62 | 15-5-65 | 20-7-67 |
| D 603 Duquesne | Brest Ars. | 1960 | 11-64 | 11-2-66 | 1-4-70 |

 $\begin{array}{ll} \textbf{D:} \ 5,090 \ tons \ (6,090 \ fl) & \textbf{S:} \ 34 \ kts \\ \textbf{Dim:} \ 157.60 \ (148.00 \ pp) \times 15.54 \times 7.25 \ (max.) \end{array}$

A: 1/Masurca SAM syst. (II \times 1; 48 missiles) — 4/MM 38 Exocet SSM — 2/100-mm, Model 1953 (I \times 2) — 4/20-mm AA (I \times 4) — 1/Malafon ASW syst. (13 missiles) - 2/catapults for L-5 torpedoes (10 torpedoes)



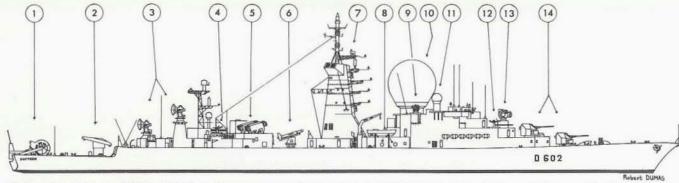
Suffren (D 602) - with Syracuse added

Pradignac & Leo, 9-84



Suffren (D 602)

Pradignac & Leo, 6-84



Suffren (D 602) 1. DUBV 43 VDS 2. Masurca twin SAM launcher 3. DRBR 51 f.c. radar directors 4. 20-mm AA 5. MM 38 Exocet launchers 6. Malafon ASW system 7. DRBV 50 search radar 8. catapults for L5 ASW torpedoes 9. Syllex chaff launcher 10. radome over DRBI 23 3-D radar 11. Syracuse SATCOMM antenna radomes 12. 20-mm AA 13. DRBC 32A f.c. radar director 14. 100-mm Model 1953



Duquesne (D 603)

G. Gyssels, 6-83



Suffren (D 602)

Pradignac & Leo, 6-84

Electron Equipt: Radar: 1/DRBN 32, 1/DRBI 23, 1/DRBV 50, 2/DRBR 51, 1/DRBC 32A

Sonar: 1/DUBV 23, 1/DUBV 43 - TACAN: URN-20 EW: ARBB 31, ARBB 32, 2 Syllex countermeasures RL

M: 2 sets Rateau double-reduction GT; 2 props; 72,500 hp

Electric: 3,440 kw ($2 \times 1,000$ -kw turbogenerators, 3×480 -kw diesel alternators)

Boilers: 4 multitube, automatic-control; 45 kg/cm², 450°C

Range: 2,000/30; 2,400/29; 5,100/18

Man: 23 officers, 164 petty officers, 168 men

Remarks: Built under the 1960-65 plan, these ships are extremely seaworthy; they roll and pitch only slightly and vibrate very little. Three pairs of nonretractable, anti-rolling stabilizers. Living and operating spaces are air-conditioned. SENIT 1 data system fitted. A new gunfire-control radar with Piranha III optronic attachment is to be installed in place of DRBC 32A in 1987. Two Dagaie and two Sagaie countermeasures launchers will replace Syllex.

1 C 65 class

Bldr Laid down In serv. D 609 ACONIT Lorient Ars. 1967 7-3-70 30-3-73



Aconit (D 609)

Maritime Photographic, 9-85

D: 3,500 tons (3,840 fl) **S:** 27 kts **Dim:** $127.0 \times 13.4 \times 4.05$ (5.8 props) **A:** 8/MM 40 Exocet SSM (IV \times 2) — 2/100-mm DP, Model 1968 (I \times 2) — 1/ Malafon ASW system (13 missiles) - 2/catapults for L-5 ASW torpedoes (10 torpedoes)

Electron Equipt: Radar: 1/DRBN 32, 1/DRBV 15, 1/DRBV 22A, 1/DRBC 32B Sonar: 1/DUBV 23, 1/DUBV 43 VDS EW: ARBB 32, ARBR 16, 2/Syllex countermeasures RL

M: 1 set Rateau double-reduction GT; 1 prop; 28,650 hp (31,500 hp for short periods)

Boilers: 2 asymmetric, multitube, automatic-control; 45 kg/cm², 450°C

Electric: 2,960 kw Range: 1,600/27; 5,000/18 Man: 15 officers, 103 petty officers, 114 men

Remarks: One computer controls the SENIT 3 data system functions and the weapons. Propulsion machinery is very compact and produced 31,500 hp on trials. Equipped with fin stabilizers. During a major refit in 1984-85 she received 8/MM 40 Exocet in place of the 305-mm mortar and DRBV 15 in place of DRBV 13.

• 1 T-56 class, ASW

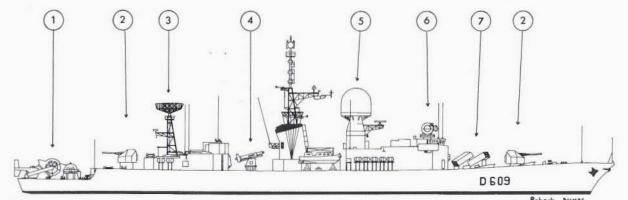
Bldr Laid down In serv. D 638 La Galissonnière Lorient Ars. 11-58 12-3-60 9-7-62

D: 2,750 tons (3,740 fl) S: 34 kts (32 fl)

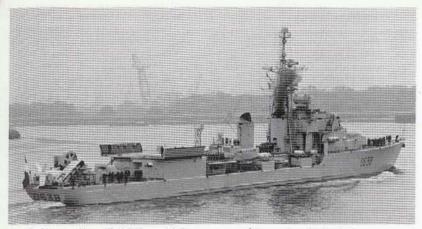
Dim: 132.80 × 12.70 × 5.40 (fwd) 5.90 (props)

A: 2/100-mm DP, Model 1953 (I × 2) - 1/Malafon ASW syst. (13 missiles) -6/550-mm TT (III × 2) for L-3 torpedoes—1/Alouette-III ASW helicopter Electron Equipt: Radar: 1/DRBN 32, 1/DRBV 22A, 1/DRBV 50, 1/DRBC 32A

Sonar: 1/DUBV 23, 1/DUBV 43 VDS - TACAN: URN 20 EW: ARBR/ARBA 10C



Provisional view of Aconit as modernized 1. DUBV 43 sonar 2. 100-mm DP mounts 3. DRBV 22A radar 4. Malafon launcher 5. DRBV 15 radar 6. 100-mm gun director with DRBC 32B radar 7. MM 40 Exocet launch cells



La Galissonnière (D 638) - with hangar opened to create a flight deck L. & L. Van Ginderen, 6-84



La Galissonnière - with hangar open

G. Gyssels, 6-84

M: 2 sets Rateau GT; 2 props; 63,000 hp

Boilers: 4 ACB-Indret; 35 kg/cm2, 385°C Fuel: 800 tons

Range: 1,500/30; 5,000/18

Man: Peacetime: 15 officers, 92 petty officers, 165 men

Remarks: Formerly an experimental vessel for ASW sonar, with two bow-mounted sonars. A quadruple 305-mm ASW mortar and six torpedo tubes (III × 2) have been removed. The hangar unfolds to become the helicopter flight deck. Due for disposal in

♦ 1 modified T-53 class, ASW

Bldr Laid down In serv. D 633 DUPERRÉ Lorient Ars. 11-5423-6-56 8-10-57



Duperré (D 633)

16 Flot., French Navy, 1980



Duperré (D 633) Skyfotos, 7-83

D: 2,750 tons (3,740 fl) S: 34 kts (32 fl) Dim: 132.8 × 12.7 × 5.9 (props) A: 4/MM 38 Exocet - 1/100-mm DP, Model 1968 - 2/20-mm AA (I × 2)-2/catapults for L-5 torpedoes (8 torpedoes) — 1/WG-13 Lynx helicopter Electron Equipt: Radar: 2/DRBN 32, 1/DRBV 22A, 1/DRBV 51, 1/DRBC 32C, Sonar: 1/DUBV 23, 1/DUBV 43 VDS

EW: ARBR 16, 2/Syllex countermeasures RL

M: 2 sets Rateau GT; 2 props; 64,000 hp Electric: 1,640 kw Boilers: 4/ACB-Indret; 35 kg/cm², 385°C Fuel: 800 tons

Range: 1,500/30; 5,000/18

Man: Peacetime: 15 officers, 102 petty officers, 142 men

REMARKS: From 1967 to 1971, the Duperré was unarmed and was used for towed-sonar research, using the huge array later mounted in the auxiliary Aunis. Reconverted at Brest from 1972 to 21-5-74, as the final step in the long evolution of the T-47, Surcouf-class destroyer design. The hangar is fixed and has maintenance facilities, and the flight deck has a harpoon helicopter-recovery system similar to that on the Tourville and Georges Leygues classes. SENIT 2 data system fitted. The ship ran aground 13-4-78 and was badly damaged, but was repaired using components cannibalized from the inactivated La Bourdonnais, recommissioning 2-80. Flagship for destroyer squadron in the Atlantic; now due for disposal 1990.

2 D'Estrées class, converted Type T-47, ASW

| | Bldr | Laid down | L | In serv. |
|--------------------|--------------|-----------|---------|----------|
| D 627 MAILLE BRÉZÉ | Lorient Ars. | 10-53 | 26-9-54 | 4-5-57 |
| D 628 Vauquelin | Lorient Ars. | 3-54 | 26-9-54 | 3-11-56 |



Maille Brézé (D 627)

L. & L. Van Ginderen, 11-84



Maille Brézé (D 627)

L. & L. Van Ginderen, 11-84

D: 2,750 tons (3,740 fl) S: 32 kts Dim: 132.5 × 12.72 × 5.9 (props)

A: 2/100-mm DP, Model 1953 (I × 2) -2/20-mm AA (I × 2) -1/Malafon ASW syst. (13 missiles) -1/375-mm Bofors ASW RL (VI × 1) -6 TT (III × 2) for L-3 ASW torpedoes

Electron Equipt: Radar: 1/DRBN 32, 1/DRBV 22A, 1/DRBV 50, 2/DRBC 32A Sonar: 1/DUBV 23, 1/DUBV 43 VDS

Boilers: 4/ACB-Indret; 35 kg/cm², 385°C Fuel: 800 tons

Range: 1,500/30; 5,000/18

Man: Peacetime: 15 officers, 103 petty officers, 151 men

Remarks: ASW conversions completed between 1-68 and 1-71: weapon system renewed, living spaces air-conditioned, electrical system and safety installations completely redesigned. These ships do not have the SENIT system. The D'Estrées has carried the British SCOT satellite-communications system as an experiment. A new, smaller TACAN is fitted in the D 628. Sisters Casabianca (D 631) stricken 1984, D'Estrées (D 629) and Guépratte (D 632) in 1985; the other two are to strike by 1988.

♦ 2 Kersaint class, converted Type T-47

| | Bldr | Laid down | L | In serv. |
|-----------------------|------------|-----------|----------|----------|
| D 625 DUPETIT THOUARS | Brest Ars. | 3-51 | 4-3-54 | 15-9-56 |
| D 630 Du Chayla | Brest Ars. | 7-53 | 27-11-54 | 4-6-57 |



Du Chayla (D 630)

L. & L. Van Ginderen, 6-84

D: 2,750 tons (3,850 fl) S: 32 kts (at 3,800 tons)

Dim: 128.50 × 12.96 × 5.00 (6.30 sonar)

A: 1/Mk 13 launcher (40 Standard SM-1 MR missiles) -6/57-mm AA (II × 3) 1/375-mm ASW RL (VI × 1) Model 1954 -- 6/550-mm TT (III × 2) for L-3 ASW torpedoes

Electron Equipt: Radar: 1/DRBV 22A, 1/SPS-39 B, 1/DRBV 31, 2/SPG-51B, 1/DRBC 31

Sonar: 1/DUBA 1, 1/DUBV 24

EW: ARBR/ARBA 10C - TACAN: URN 20

M: 2 sets Rateau GT; 2 props; 63,000 hp Electric: 1,600 kw

Boilers: 4 ACB-Indret; 35 kg/cm2, 385°C

Range: 1,200/32; 3,500/20; 4,100/14

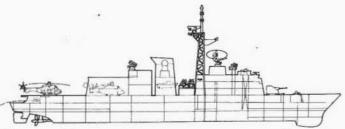
Man: Peacetime: 15 officers, 87 petty officers, 173 men

Remarks: Converted to carry U.S. Tartar missile system, 1961-65. DRBV 20 air-search radar replaced by later DRBV 22A. Sisters Bouvet (D 624) and Kersaint (D 622) stricken 1-1-82 and 1-12-83, respectively, to provide missile systems for the 1st and 2nd C-70AA-class destroyers under construction. D 625 to strike 1987 and D 630 in 1988 for the same purpose. Have SENIT 2 data system.

FRIGATES

♦ 0 (+3) FL 25 class

| | Bldr | Laid down | | L | In serv. |
|-----|------|-----------|----|---|----------|
| F N | | | | | |
| F N | | | 21 | | |
| F N | | | | | |



FL 25 class-provisional layout

French Navy, 1984

D: 3,000 tons (mean trials) S: 26 kt. Dim: 113.0 pp × 13.0 × 3.90 (hull) A: 8/MM 40 Exocet (IV \times 2) - 1/Crotale EDIR SAM syst. (VIII \times 1; . missiles) - 2/Sadral SAM syst. (VI × 2; . . . Mistral missiles) - 1/100-mm Compact DP - 2/20-mm AA (I × 2) - 2/catapults for F17 ASW torpedoes (18 tot.) - 1/helicopter (AS.15 and/or AM 39 Exocet ASM)

Electron Equipt: Radar: 1/Decca 1226, 1/DRBV 15 (Sea Tiger), 1/DRBV 26 (Jupiter II), 1/DRBC-33, 1/Crotale control

Sonar: . . . hull-mounted, DSBV 61 TASS EW: ARBR 17 intercept, 2 ARBB 33 jammer, 2 Sagaie chaff RL (VI × 2), 2 Dagaie chaff R2

M: CODELOD: 4 SEMT-Pielstick 16 PA6 BTC diesels; 2 props; 32,500 hp (2 electric motors for speeds up to 12 kts)

Range: 7,000/15 Man: 156 crew + 24 troops Electric: . . .

Remarks: Intended to begin replacement of the Cdt. Rivière class, hence envisioned use of Super Puma helicopter to carry troops as well as for surveillance, torpedo-dropping, and anti-ship duties. Will have Syracuse SATCOMM equipment and the DIBV 10 Vampir IR surveillance device. Torpedo complement listed is for ship and helo launch. Fixed-pitch props. Steel superstructure. Data above are provisional.

♦ 17 D'Estienne D'Orves class, Type A-69 Bldr: Lorient Arsenal

| 1-9-72 9-73 10-73 12-74 | 1-6-73 30-11-74 30-11-74 31-1-76 | 10-9-76 13-10-76 30-9-76 4-5-77 |
|----------------------------------|--|--|
| 10-73 12-74 | 30-11-74 | 30-9-76 |
| 12-74 | | |
| | 31-1-76 | 4-5-77 |
| 15-1-75 | | |
| TO-T-10 | 31-1-76 | 11-5-77 |
| 1-8-75 | 7-8-76 | 4-2-78 |
| 1-9-75 | 7-8-76 | 20-5-78 |
| 1-11-76 | 13-8-77 | 7-7-79 |
| 3-77 | 16-9-78 | 13-2-80 |
| 11-11-77 | 29-5-79 | 16-8-80 |
| 7-5-79 | 7-3-81 | 1985 |
| 5-12-78 | 28-6-80 | 15-12-81 |
| 5-11-79 | 7-3-81 | 28-4-82 |
| 4-79 | 26-9-81 | 23-10-82 |
| 1-10-80 | 26-9-81 | 17-3-83 |
| 23-3-81 | 22-5-82 | 14-3-84 |
| 2-10-81 | 23-4-83 | 19-6-84 |
| | 1-9-75 1-11-76 3-77 1-11-77 7-5-79 5-12-78 5-11-79 4-79 1-10-80 23-3-81 | 1-8-75 7-8-76 1-9-75 7-8-76 1-11-76 13-8-77 3-77 16-9-78 1-11-77 29-5-79 7-5-79 7-3-81 5-12-78 28-6-80 5-11-79 7-3-81 4-79 26-9-81 1-10-80 26-9-81 23-3-81 22-5-82 |



Commandant de Pimodan (F 787) - with MM 38 Exocet

J. Pradignac, 6-85



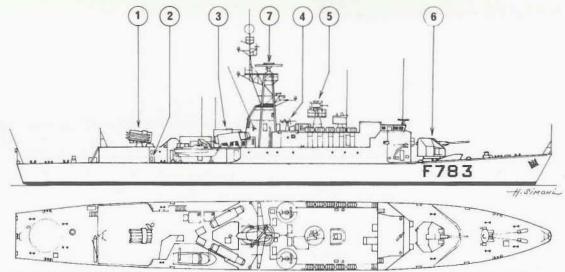
Commandant Blaison (F 793) - with MM 40 Exocet

J. Pradignac, 1985



Jean Moulin (F 785) - without Exocet

L. & L. Van Ginderen, 12-84



Model 1954 2. ASW torpedo tubes 3. Exocet Drogu 1. Sextuple Bofors ASW rocket launcher, launchers 4. 20-mm AA gunmounts 5. DRBC 32E fire-control radar 6. 100-mm DP gunmount, Model 7. DRBV 51A search radar



Commandant Birot (F 796) — with MM 38 Exocet, Dagaie Pradignac & Leo, 1984

D: 1,100 tons (1,250 fl) S: 24 kts

Dim: 80.0 (76.0 pp) × 10.3 × 3.0 (5.3 sonar)

A: F 781, 783, 785, 786, 787, 796, 797: 2/MM 38 Exocet (I \times 2); F 792 — 795: 2/MM 38 Exocet (II × 1) - 1/100-mm DP, Model 1968 - 2/20-mm AA $(I \times 2) - 1/375$ -mm ASW rocket launcher $(VI \times 1) - 4/TT$ for L-3 and L-5 ASW torpedoes

Electron Equipt: Radar: 1/DRBN 32, 1/DRBV 51A, 1/DRBC 32E Sonar: 1/DUBA 25

EW: ARBR 16, 2/Dagaie RL (in final 7 ships)

M: 2 SEMT-Pielstick 12 PC 2 diesels; 2 CP props; 11,000 hp Electric: 840 kw Endurance: 15 days Range: 4,500/15

Man: 7 officers, 42 petty officers, 56 men

Remarks: Very economical and seaworthy ships designed for coastal antisubmarine warfare, but available for scouting missions, instruction, and showing the flag. Can carry a troop detachment of one officer and seventeen men. The control system for the 100-mm gun consists of a DRBC 32E monopulse, X-band radar, and a semi-analog, semi-digital computer; it also has an optical sight. F 781, F 783, F 786, and F 787 of the Mediterranean Squadron have 2/MM 38 Exocet. All have fin stabilizers. Stacks and masts were modified from the Jean Moulin (F 785) onward; the heightened stack is being backfitted in earlier units. Plans to add a helicopter facility to F 793 and F 794 were abandoned. F 791 has 2 SEMT-Pielstick 12 PA 6 BTC diesels totaling 14,400 hp, with infrared signature suppression features; protracted trials delayed commissioning. The original Lieutenant de Vaisseau Le Henaff and Commandant L'Herminier were completed to a slightly modified design for South Africa and then sold to Argentina, which also ordered an additional unit.

1 Modified Commandant Rivière class

Bldr Laid down In serv. F 729 BALNY 3-60 17-3-62 Lorient Ars. 1 - 2 - 70

D: 1,750 tons (2,230 fl) S: 26 kts Dim: 102.7 (98.0 pp) \times 11.8 \times 5.0 (prop) A: 2/100-mm DP, Model 1953 (I \times 2) —2/30-mm AA (I \times 2) —1/305-mm ASW mortar (IV \times 1) —6/TT for L-3 ASW torpedoes (III \times 2)

Electron Equipt: Radar: DRBN 32, 1/DRBV 22A, 1/DRBC 32C Sonar: 1/DUBA 3, 1/SQS 17-EW: ARBR 16

M: CODAG: 1 Turbomeca M 38 gas turbine (11,500 hp), 2 AGO V-16 diesels (3,600 hp each); 1 CP prop; 18,700 hp

Electric: 1,280 kw Range: 13,000/10 Man: 9 officers, 67 petty officers, 93 men



Balny (F 729)

REMARKS: Allocated for trials in 1964 with the French Navy's first combined gas-turbine and diesel plant (CODAG). The gas turbine is a version of the Atar-8 turbojet used in the Étendard fighter, reduced in rate from 15,000 shp to 11,500 hp. Both diesels and the gas turbine can be clutched together to drive the single propeller, which is 3.6 meters in diameter and extends 1 meter beneath the keel. The compactness of the Balny's propulsion plant compared with that of the all-diesel plants in her halfsisters of the Commandant Rivière class permits her to carry approximately 100 more tons of fuel, which accounts for her great endurance on diesels alone. Because one of her 100-mm guns is mounted atop the lengthened after superstructure, it has not been possible to install Exocet anti-ship missiles.

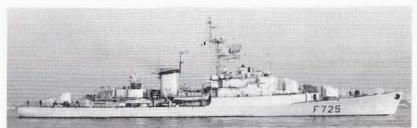
| 7 Commandant Rivière class | Bldr: Lorient Arsenal | | |
|--|-----------------------|----------|----------|
| | Laid down | L | In serv. |
| F 725 VICTOR SCHOELCHER | 10-57 | 11-10-58 | 15-10-62 |
| F 726 Commandant Bory | 3-58 | 11-10-58 | 5-3-64 |
| F 727 AMIRAL CHARNER | 11-58 | 12-3-60 | 14-12-62 |
| F 728 Doudart De Lagrée | 3-60 | 15-4-61 | 1-5-63 |
| F 740 Commandant Bourdais | 4-59 | 15-4-61 | 10-3-63 |
| F 748 PROTET | 9-61 | 7-12-62 | 1-5-64 |
| F 749 Enseigne De Vaisseau Henry | 9-62 | 14-12-63 | 1-1-65 |

D: 1,750 tons (2,070 normal, 2,230 fl) S: 26 kts (26.6 on trials)

Dim: 102.7 (98.0 pp) × 11.8 × 4.35 (max.)

A: 4/MM 38 Exocet — 2/100-mm DP, Model 1963 (I × 2) — 2/30- or 40-mm AA-1/305-mm ASW mortar (IV × 1)-6/TT L-3 ASW torpedoes (III × 2) Electron Equipt: Radar: 1/DRBN 32, 1/DRBV 22A, 1/DRBC 32C

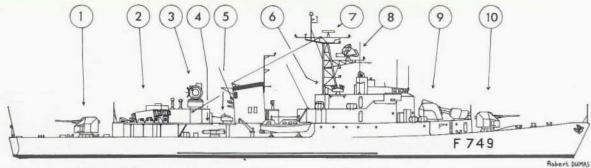
Sonar: 1/DUBA 3, 1/SQS-17 EW: ARBR 16, 2/Dagaie countermeasures RL M: 4 SEMT-Pielstick 12 PC-series diesels; 2 props; 16,000 hp Electric: 1,280 kw Fuel: 210 tons Range: 2,300/26; 7,500/16.5 Endurance: 45 days Man: 9 officers, 66 petty officers, 91 men



Victor Schoelcher (F 725)

J.-C. Bellonne, 1983

FRIGATES (continued)



Enseigne De Vaisseau Henry 1. After 100-mm Model 1953 DP 2. MM 38 Exocet launchers 3. DRBC 32C f.c. radar director 4. ASW TT 5. 40-mm AA 6. Dagaie decoy RL 7. DRBN 32 (Decca RM 1226) nav. radar 8. DRBV 22A air-search radar 9. 305-mm quadruple mortar 10. forward 100-mm DP



Amiral Charner (F 727)

LSPH S. Given, R.A.N., 1984



Protet (F 748) - 30-mm AA and Dagaie

G. Gyssels, 6-82

Remarks: Designed for escort duty in various climates; air-conditioned. Can embark a flag officer and staff or an 80-man commando unit. F 726 originally had free-piston generators driving turbines, but these were replaced with a standard diesel plant in 1974-75. Beginning in the mid-1970s, four Exocet missiles replaced a 100-mm gun atop the after superstructure. F 728 replaced Forbin as cadet training ship in 1981. F 726 was the first ship to carry the Dagaie countermeasures rocket-launching system. F 725, F 748, and F 749 have 30-mm AA, the others have 40-mm AA. Sister Commandant Rivière (F 733) rerated as an auxiliary and converted 1985 as sonar trials ship.

PATROL BOATS

| ♦ 6 (+4) P 400 (Super PATRA) class | | Bldr: C | Bldr: CMN, Cherbourg | | |
|------------------------------------|-----------|----------|----------------------|--------------|--|
| | Laid down | L | In serv. | Op. Area | |
| P 682 L'Audacieuse | 11-4-83 | 21-3-84 | 21-3-85 | Indian Ocean | |
| P 683 La Boudeuse | 15-6-83 | 21-5-84 | | Nouméa | |
| P 684 La Capricieuse | 12-4-83 | 31-10-84 | | Papeete | |
| P 685 La Fougeuse | 25-11-83 | 17-12-84 | | Indian Ocean | |
| P 686 LA GLORIEUSE | 21-2-84 | 25-1-85 | | Papeete | |
| P 687 La Gracieuse | 26-4-84 | 26-3-85 | | Papeete | |
| P 688 La Moqueuse | 4-10-84 | | | Fr. Guyana | |
| P 689 La Railleuse | 27-12-84 | | | Fr. Guyana | |
| P 690 La Rieuse | 14-3-85 | | | Cherbourg | |
| P 691 La Tapageuse | 6-85 | | | Cherbourg | |



L'Audacieuse (P 682)

French Navy, 1984

D: 371.5 tons (414 fl) **S:** 24 kts **Dim:** 54.50 (50.0) \times 8.0 (7.7 wl) \times 2.54 (1.9 hull)

A: 1/40-mm AA — 1/20-mm AA — 1/7.62-mm mg

Electron Equipt: Radar: 1/DRBN 32 (Decca 1226)
M: 2 Alsthom/SEMT-Pielstick 16 PA 4V200 VGDS diesels; 2 props; 8,000 hp

Electric: 360 kw Range: 4,000/15 Endurance: 15 days Man: 3 officers, 22 men + 23 passengers Fuel: 73 tons

Remarks: First six ordered 5-82, remainder on 6-3-84. Four were originally to have been part of the Force de Service Public (Public Service Force) under the designation SP 400 class; they were to have had firefighting, search-and rescue, and antipollution equipment. All will now be identical. Last two to relieve Glaive (P 671) and Pertuisane (P 673) on Atlantic Coast. Carry 840 rds. 40-mm and 2,100 rds. 20-mm ammunition; equipped for later addition of two Exocet missiles and a fire-control radar. Maximum permissible displacement is 446 tons. P 686 carried small variable-depth sonar for trials in 1985.

♦ 4 Trident ("PATRA") class

| | Bldr | L | In serv. |
|------------------|------------------|---------|----------|
| P 670 TRIDENT | Auroux, Arcachon | 31-5-76 | 17-12-76 |
| P 671 GLAIVE | Auroux, Arcachon | 25-8-76 | 3-77 |
| P 672 Épée | C.N.M. Cherbourg | 31-3-76 | 9-10-76 |
| P 673 PERTUISANE | C.N.M. Cherbourg | 2-6-76 | 20-1-77 |



Glaive (P 671)

G. Gyssels, 2-85



Pertuisane (P 673)

L. & L. Van Ginderen, 5-85

PATROL BOATS (continued)

D: 115 tons (148 fl) **S:** 28 kts **Dim:** 40.70 (38.5 wl) \times 5.90 \times 1.55

A: 1/40-mm AA -2/12.7-mm mg (I $\times 2$)

Electron Equipt: Radar: 1/DRBN 32 (Decca 1226)

M: 2 AGO 195 V 12 CZSHR diesels; 2 CP props; 5,000 hp (4,400 sust.)

Electric: 120 kw Range: 750/20; 1,500/15; 1,750/10

Man: 2 officers, 5 petty officers, 12 men

Remarks: Thirty were planned, then fourteen, but only four were finally built. Two sisters have been built for the Ivory Coast, and another, initially commissioned as Rapière (P 674) in the French Navy, was sold to Mauritania in 1982. Epée and Trident are stationed overseas, other two serve Gendarmerie Maritime. Carry 500 rounds of 40-mm, 2,000 rounds 12.7-mm ammunition. Six SS-12 wire-guided missile launchers atop the superstructure have been replaced by a single 12.7-mm mg.

♦ 1 Sterne class Bldr: A & C. de la Perrière, Lorient

Laid down L In serv. P 680 Sterne 18-5-79 31-10-79 18-7-80



Sterne (P 680)

LV (R) B. Prézelin, French Navy, 3-84

D: 270 tons (380 fl) S: 20 kts Dim: 49.00 (43.60 pp) × 7.50 × 2.80

A: 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 1/DRBN-32, 1/Decca. . . .

M: 2 SACM V12 CZSHR diesels; 2 props; 4,200 hp Endurance: 15 days Range: 1,500/19; 4,900/12 Man: 16 tot.

Remarks: Constructed to merchant marine specifications for fisheries patrol duties within the 200-nautical-mile economic zone, including rescue services. Equipped with a large infirmary. Passive tank stabilization system. Can patrol at speeds up to 6.5 knots on an electrohydraulic drive system connected to the starboard propeller. Two rubber inspection dinghies are carried. Accommodations for 23 persons.

♦ 1 former stern-haul trawler Bldr: Le Trait (1965-67)

P 681 Albatros (ex-Nevé) (In serv. 23-3-84)



Albatros (P 681)

J.-C. Bellonne, 1-84

D: 1,800 tons (2,800 fl) S: 15 kts Dim: 85.0 (75.0 pp) × 13.5 × 6.0

A: 1/40-mm AA - 2/12.7-mm mg (I×2) Electron Equipt: Radar:

M: Diesel-electric drive; 1 prop, 2,200 hp

Range: 12,000/15 Man: 6 officers, 20 petty officers, 16 men + 15 passengers

Remarks: Purchased 1982 from Société Naval Caenaise for use in Antarctic area fisheries patrol duties, off Kerguelen, Crozet, St. Paul, and Amsterdam islands. Based at La Réunion.

1 Combattante-I class

P 730 La Combattante CMN, Cherbourg 4-62 20-6-63 1-3-64



La Combattante (P 730)

L. & L. Van Ginderen, 2-85

D: 180 tons (202 fl) S: 23 kts Dim: 45.0 × 7.35 × 2.45 (fl)

A: 1/40-mm AA -2/12.7-mm mg (I \times 2)

M: 2 SEMT-Pielstick 8 PA4 200 VGDS diesels; 2 CP props; 3,600 hp

Electric: 120 kw Range: 2,000/12

Man: 3 officers, 22 men

Remarks: Antimagnetic, laminated wood and plastic hull. Re-engined 1978. Launcher for 4 SS-12 wire-guided missiles removed. Formerly based at Tahiti; now operates in Mediterranean for the *Gendarmarie Maritime*.

♦ 1 Type DB-1 former minesweeper

Bldr: Const. Méc. de Normandie,

Cherbourg

P 765 MERCURE

Laid down 1-55

L 21-2-57 In serv. 20-12-58



Mercure (P 765)

LV (R) B. Prézelin, French Navy, 11-84

D: 365 tons (400 fl) S: 15 kts Dim: 44.35 (42.0 pp) × 8.27 × 4.04 A: 2/20-mm AA (II × 1) Electron Equipt: Radar: 1/DRBN 32

M: 2 MGO diesels; 2 Ka-Me-Wa CP props; 5,000 hp Range: 6,200/10

Man: 5 officers, 14 petty officers, 18 men

Remarks: The Mercure was converted to a fisheries-protection ship, re-entering service 22-12-80. Minesweeping equipment removed. Insulated against cold climate. Habitability modernized. Carries two 6-man rubber inspection boats with 20-hp motors. Physician and dentist carried; accommodations for 44 personnel. Former pendant number M 765. Construction financed by U.S. as MSC 254. Six sisters built for West Germany have since been transferred to Turkey.

Note: The four Canadian "Bay"-class former minesweepers operated as colonial gunboats were stricken during 1985-86: La Lorientaise (P 652), La Dunkerquoise (P 653), La Dieppoise (P 655) and La Paimpolaise (P 657), as was the former Sirius-class minesweeper, Canopus (P 659).

4 British "Ham"-class ex-minesweepers

| | Bldr | In serv. |
|-------------------------------|---------------------|----------|
| P 661 Jasmin (ex-Stedham) | Blackmore, Bideford | 5-11-55 |
| P 662 Petunia (ex-Pineham) | McLean, Renfrew | 1956 |
| P 742 PAQUERETTE (ex-Kingham) | J. S. White | 14-8-54 |
| P 784 GÉRANIUM (ex-Tibenham) | McGruer | 23-7-55 |



Jasmin (P 661)

LV (R) B. Prézelin, 3-85

PATROL BOATS (continued)

D: 140 tons (170 fl) S: 14 kts Dim: 33.43 × 6.45 × 1.7 A: 1/20-mm AA M: 2 Paxman YHAXM diesels; 2 props; 550 hp Fuel: 15 tons Endurance: 4 days Man: 1 officer, 10 petty officers, 2 men

Remarks: Except for the Petunia (P 662), which is used by the Navy as a buoy tender and patrol boat, all are manned by the Gendarmerie. Built with U.S. Offshore Procurement funds as USN MSI 86, MSI 87, MSI 82, and MSI 84, respectively. Sister Jonquille (P 787) stricken 1984, Violette (P 788) in 1985; P 662 to discard 1986.

PATROL CRAFT

♦ 4 P 778 class Bldr: CMN, Cherbourg (In serv. 1974)

P 778 P 779 P 780 (Karukera) P 781 (Gugane)

D: 20 tons (30 fl) S: 25 kts Dim: 24.9 × 5.3 × . . . A: 1/12.7-mm mg M: 2 diesels; 2 props; . . . hp

REMARKS: P 778 at Papeete, P 779 at La Réunion, P 780 at Cayenne, P 781 at Pointe á Pitre. Manned by Gendarmerie Marine. Names in parentheses are unofficial. P 778 to be stricken 1986.

♦ 2 Volte 43 class Bldr: Tecimar (In serv. 1975)

P 772 P 774



Tecimar, 1974

D: 14 tons **S:** 21 kts **Dim:** $13.30 \times 3.90 \times 1.10$

A: 1/12.7-mm mg — 1/7.62-mm mg M: 2 G.M. 8V71 diesels; 2 props; 670 hp Electron Equipt: Radar: 1/Decca 1229 Range: 400/20 Man: 4 tot.

Remarks: Hull molded of glass-reinforced plastic. Manned by the Gendarmerie, P 772 and 774 at Brest. P 771 transferred to Djibouti, P 770 stricken.

MINE WARFARE SHIPS

Note: The tender Loire (A 615) is, in effect, a mine-countermeasures support ship. However, because she has an auxiliary "A" pendant, and for convenience, she is listed with her Rhin-class sisters under Support Tenders.

◆ 0 (+5) seagoing minehunter/minesweepers

| | Bldr | Laid down | L | In serv. |
|-----|----------|-----------|--------|----------|
| M N | 40404 | | | 1990 |
| M N | | | | |
| M N | 6.6.6 | * * * * | X190.0 | |
| M N | 8. 6. 4. | | * * * | |
| M N | | * * * | | |

D: 800 to 1,000 tons (fl) S: . . . Dim: . . . ×

A: . . . Electron Equipt: Radar: . . .

Sonar: towed DUBM 41C

M: Diesels; 2 props; . . . hp Man: . . .

REMARKS: Typed BAMO-Bâtiment Antimines Oceaniques. Designed by GESMA mine-warfare center. Glass-reinforced plastic construction. First five replace original last five ships in Tripartite program; five others may order in 1990s. Will carry a remote-controlled minehunting device with sonar and t.v. sensors.

♦ 5 (+5) Tripartite-class minehunters Bldr: Lorient Arsenal

| | Laid down | L | In serv. |
|--------------------|-----------|---------|----------|
| M 641 ERIDAN | 20-12-77 | 2-2-79 | 16-4-84 |
| M 642 Cassiopée | 26-3-79 | 28-9-81 | 5-5-84 |
| M 643 Andromède | 6-3-80 | 22-5-82 | 19-10-84 |
| M 644 Pégase | 22-10-80 | 23-4-83 | 30-5-85 |
| M 645 Orion | 17-8-81 | 6-2-85 | 1985 |
| M 646 CROIX DU SUD | 22-4-82 | 6-2-85 | 1986 |
| M 647 AIGLE | | | 1987 |
| M 648 Lyre | 14-10-83 | | 1987 |
| M 649 Persée | 30-10-84 | | 1988 |
| M 650 Sagittaire | 4 4 4 | | 1988 |



Cassiopée (M 642)

LV (R) B. Prézelin, French Navy, 4-85



Eridan (M 641)

16 Flot., French Navy, 1982

D: 500 tons (562 fl) S: 15 kts on main engine, 7 kts while hunting Dim: 51.6 (47.1 pp) × 8.96 × 2.49 (hull) 2.64 (max.)

A: 1/20-mm AA - 2/12.7-mm mg (I × 2) - 2/PAP-104 remote-control minelocators

Electron Equipt: Radar: 1/Decca 1229, 1/automatic track-plotter with numerical calculator, automatic pilot, Toran and Syledis radio navigation systems, Decca HiFix Sonar: DUBM 21B

M: 1 Brons-Werkspoor A-RUB 215 \times 12 diesel; 1 CP prop; 1,900 hp 2 electric maneuvering props, 120 hp each; bow-thruster

Electric: 750 kw Range: 3,000/12 Man: 5 officers, 29 petty officers, 21 men

Remarks: Hull built of glass-reinforced polyester plastic. Program well behind schedule; last five canceled in favor of a larger design. Will have one mechanical drag sweep. France, Belgium, and The Netherlands are cooperating in building these ships for the requirements of the three countries. French examples are rated at a heavier displacement, (562 fl vice 544), with 595 tons given as limiting displacement. Have the EVEC 20 automatic plotting table and other precision navigation equipment. In 1985 began to receive the AP-4 acoustic sweep.

5 Circé-class minehunters Bldr: Const. Méc. de Normandie, Cherbourg

| | Laid down | L | In serv. |
|----------------|-----------|----------|----------|
| M 712 Cybèle | 15-9-70 | 2-3-72 | 28-9-72 |
| M 713 CALLIOPE | 4-4-70 | 20-10-71 | 28-9-72 |
| M 714 CL10 | 4-9-69 | 10-6-71 | 18-5-72 |
| M 715 CIRCÉ | 30-1-69 | 15-12-70 | 18-5-72 |
| M 716 Cérès | 2-2-71 | 10-8-72 | 8-3-73 |



Calliope (M 713)

L. & L. Van Ginderen, 6-85

MINE WARFARE SHIPS (continued)



Circé (M 715)

G. Gyssels, 2-85



Cybèle (M 712)

LV (R) B. Prézelin, 4-85

D: 460 tons (495 fl) **S:** 15 kts **Dim:** 50.9 (46.5 pp) \times 8.9 \times 3.6 (max.)

A: 1/20-mm AA - 2 PAP-104 remote control mine-locators

Electron Equipt: Radar: Decca 1229 - Sonar: DUBM 20 (minehunting)

M: 1 MTU diesel; 1 prop; 1,800 hp

Range: 3,000/12 Man: Peacetime: 4 officers, 19 petty officers, 24 men

Remarks: Designed for the detection and destruction of mines laid as deep as 60 meters. Hull made of laminated wood. Stress is on anti-magnetism and silence. Two independent propulsion systems, one for navigation, the other for minesweeping, both with remote control. Special rudders with small propellers mounted at the base of the rudder's after end and powered by a 260-hp electric motor, giving a speed of 7 knots and permitting exceptional maneuverability. Mines are destroyed either by divers (six in each crew) or by the PAP-104 (poisson auto-propulsé) wire-guided sled device, which is 2.7 meters long, 1.1 meters in diameter, weighs 700 kg, is moved by two electric motors that drive it at 6 knots for a distance of up to 500 meters, and has a television camera that displays an image of the mine. It can deposit its explosive charge of 100 kg near the mine. When the sled has been recovered, the charge is detonated by ultrasonic waves. These ships do not have minesweeping gear. Cérès carried the prototype EVEC automatic plotting table, now aboard all. All to receive updated DUBM 20A sonar with coherent processing feature during mid-1980s refits.

• 5 ex-U.S. Agile class, converted to minehunters yard, Bellingham, Washington

Bldr: Bellingham Ship-

| | In serv. | Converted |
|-------------------------------|----------|-----------|
| M 615 CANTHO (ex-MSO 476) | 14-10-55 | 1-9-78 |
| M 616 Dompaire (ex-MSO 454) | 21-5-55 | 14-4-77 |
| M 617 GARIGLIANO (ex-MSO 452) | 30-10-54 | 18-9-79 |
| М 618 Мутно (ех-МSO 475) | 21-5-55 | 7-4-78 |
| M 619 Vinh-Long (ex-MSO 477) | 14-10-55 | 10-4-78 |

D: 700 tons (780 fl) **S:** 13.5 kts (14 kts on trials) **Dim:** $50.29 \times 10.67 \times 3.15$

A: 1/40-mm AA - 2/PAP-104 remote-control mine-locators

Electron Equipt: Radar: 1/Decca 1229 Sonar: DUBM 21

M: 2 G.M. 8-278A diesels; 2 CP props; 1,600 hp; bow-thruster

Range: 3,000/10 Man: Peacetime: 4 officers, 22 petty officers, 28 men

Remarks: Modified as minehunters 1976-79. Mechanical minesweeping capability retained. All have new bridge superstructure. Have EVEC 11 automatic plotting tables.



Dompaire (M 616)

G. Gyssels, 2-85

• 5 ex-U.S. Agile-class ocean minesweepers

| | Bldr | In serv. |
|-------------------------------|--------------------------------------|----------|
| M 610 Ouistreham (ex-MSO 513) | Peterson Bldrs., Sturgeon Bay, Wisc. | 8-56 |
| M 612 ALENÇON (ex-MSO 453) | Bellingham SY, Wash. | 6-54 |
| M 613 Berneval (ex-MSO 450) | Bellingham SY, Wash. | 12-53 |
| M 620 Berlaimont (ex-MSO 500) | Bellingham SY, Wash. | 1-56 |
| M 623 BACCARAT (ex-MSO 505) | Tacoma Boat, Wash. | 3-56 |
| | | |



Alençon (M 612) - short stack

L. & L. Van Ginderen, 6-85



Berlaimont (M 620) - tall stack

M. Louagie, 1-85

D: 700 tons (780 fl)
 S: 13.5 kts (14 kts on trials)
 Dim: 50.29 × 10.67 × 3.15
 A: 1/40-mm AA
 Electron Equipt: Radar: Decca 1229—Sonar: DUBM 41B
 M: 2 G.M. 8-268A diesels; 2 CP props; 1,600 hp
 Fuel: 47 tons
 Range: 3,000/10
 Man: 5 officers, 53 men

Remarks: Conversion of these ships to minehunters was canceled. However, they began receiving the new DUBM 41B sonar in 1978. M 620 recommissioned 3-80, M 613 in 7-80, M 612 in 1-81, and M 610 on 1-7-81. M 612 and M 613 have short stacks. Sister Narvik (M 609) was reclassified A 769 1-1-76 as a trials ship for the AP-4 acoustic sweep and the DUBM 21 sonar—see Experimental Ships.

MINE WARFARE SHIPS (continued)

♦ 5 Sirius-class coastal minesweepers

Bldr: CMN, Cherbourg

| | L | In serv. |
|------------------|---------|----------|
| M 737 CAPRICORNE | 8-8-56 | 11-7-58 |
| M 749 PHÉNIX | 23-5-55 | 21-12-56 |
| M 755 CAPELLA | 6-10-55 | 1-5-56 |
| M 756 Céphée | 3-1-56 | 11-6-56 |
| M 757 Verseau | 26-4-56 | 10-9-56 |



Verseau (M 757)

L. & L. Van Ginderen, 9-84

D: 400 tons (440 fl) S: 15 kts (11.5 kts when sweeping) Dim: 46.4 (42.7 pp) \times 8.55 \times 2.5 A: 1/20-mm AA

Electron Equipt: Radar: 1/DRBN 31

M: 2 SEMT-Pielstick 16 PA1-175 diesels; 2 props; 1,600 hp Fuel: 48 tons

Range: 3,000/10 Man: 3 officers, 35 men

Remarks: French-built versions of the British "Ton" class. Engines built by S.G.C.M. Hull laminated wood and light aluminum alloy. Keel and stem in heavy wood. Have gear for sweeping mechanical, magnetic, and acoustic mines. The Capricorne (M 737) has greater degaussing capability than the others. All have one diesel sweep-generator (500 hp). Aries (M 758) was loaned to Morocco in 1975. Bételgeuse (A 747) was reclassified 1-5-77 as an experimental ship and used for trials with the DUBM 41 sonar and its computer. M 749 through M 757 were financed under the U.S. Offshore Procurement program as MSC 232 to MSC 235. To be stricken 1988-89.

AMPHIBIOUS WARFARE SHIPS

♦ 0 (+1+2) TCD 90 dock landing ships

| | Bldr | Laid down | L | In serv. |
|---------------|------------|-----------|-----------|----------|
| L 9011 FOUDRE | Brest Ars. | 1986 | late 1987 | 1990 |
| L 9012 N | | | 6.5 6 | 1992 |
| L 9013 N | | | | 1993 |

D: 9,300 tons (11,800 fl) S: 21 kts Dim: 168.00 (160.00 pp) × 23.50 (22.00 wl) \times 5.2 (9.10 flooded)

A: 2/SADRAL SAM syst (VI × 2, . . Mistral missiles) - 1/40-mm AA - 2/20mm AA (I × 2) -4/Super Puma or Puma helicopter

Electron Equipt: Radar: 2/Decca . . . 1/Rodeo (French Army radar) EW: . . intercept;

M: 2 SEMT-Pielstick 16 PC 2.5-V400 diesels; 2 CP props; 20,000 hp cont.

Electric: 4,250 kw Range: 11,000/15 Fuel: .

Man: 210 crew + 350 passengers or 1,200 troops (470 extra emergency)

Remarks: TCD = Transport de Chalands de Débarquement intended to carry one mechanized, 350-man regiment plus 1,080 tons combat vehicles and cargo for the Rapid Action Force; will also be able to act as logistics support ships. Docking well for 2 CDIC (EDIC replacement) or 10 CTM landing craft or one P 400 patrol boat: 1,740 m2. Helo platform 1,080 m2 with two spots, plus third spot on rolling dock-well cover; hangar for 4 helicopters. Vehicle cargo area of 1,360 m2 can be extended by using dock

floor; 60-ton elevation connects dock floor and cargo decks. Side loading doors. Will have Syracuse SATCOMM system. Propulsion plant same as in Meuse-class replenishment ships

First ordered 5-11-84; others to order 1986, 1988.

Note: A smaller dock landing ship, ordered 12-83 to support the Pacific nuclear-weapons testing facility, is described in the auxiliary pages with other ships subordinated to the same agency.

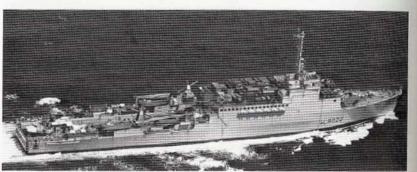
♦ 2 Ouragan-class dock landing ships

| | Budget | Bldr | Laid down | L | In serv. |
|----------------|-----------|------------|-----------|---------|----------|
| L 9021 Ouragan | 1960 | Brest Ars. | 6-62 | 9-11-63 | 1-6-65 |
| L 9022 Orage | (22-7-65) | Brest Ars. | 6-66 | 22-4-67 | 1-3-68 |



Ouragan (L 9021)

L. & L. Van Ginderen, 11-83



Orage (L 9022)

U.S. Navy, 8-82

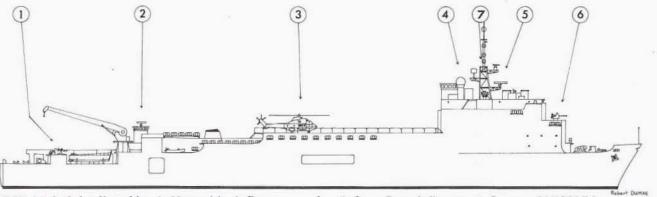
D: 5,800 tons (8,500 fl) S: 17.3 kts

Dim: 149.0 (144.5 pp) × 21.5 × 5.4 (8.7 max.) A: 4/40-mm AA (I × 4) -2/120-mm mortars (on L 9021 only)

Electron Equipt: Radar: 1/DRBN 32-Sonar: 1/SQS-17 on L 9021 M: 2 SEMT-Pielstick diesels; 2 CP props; 8,640 hp Electric: 2,650 kw

Range: 4,000/15 Man: 10 officers, 66 petty officers, 135 men

Remarks: Bridge to starboard of permanent helicopter deck. L 9022 is assigned to the Pacific Test Center and acts as transport to and from France, as well as floating headquarters, employing a modular structure within the well deck. Both have repair facilities. Can carry 349 troops, including 14 officers, or 470 troops for a short distance. A 120-meter-long well with a 14-by-5.5-meter stern gate can be submerged by 3 meters. When ships are ballasted down, displacement reaches 14,400 tons. Movement of the sluices and valves is automatic, using pumps (3,000 m³/h) controlled from a central position. A removable deck in six sections covers 36 meters of the after part of the well and allows the landing and takeoff of heavy helicopters. A 90-meter-long temporary deck in 15 sections can be used to stow cargo or vehicles, but its use reduces



TCD 90 dock landing ship 1. 20-mm AA 2. Decca nav. radar 3. Super Puma helicopter 4. Syracuse SATCOMM antenna radomes 5. Decca nav. radar 6. 40-mm AA 7. SADRAL point-defense SAM system

AMPHIBIOUS WARFARE SHIPS (continued)

the number of landing craft that can be carried, because the well is then diminished by half.

If used as transports, they can embark either two EDIC landing craft for infantry and tanks, carrying 11 light tanks or trucks, or 18 LCM Mk 6 with tanks or vehicles and, in addition, heavy helicopters on a landing platform. If used as cargo-carriers, they can embark 1,500 tons of material. Lifting equipment includes two 35-ton cranes. A combined command center permits the simultaneous direction of helicopter and amphibious operations. To be discarded in 1990 and 1993, respectively.

• 3 Argens-class tank landing ships

| | Bldr | Laid down | L | In serv. |
|-------------------------|------------------|-----------|----------|----------|
| L 9004 Bidassoa (BDC-5) | Seine Maritime | 1-60 | 30-12-60 | 7-61 |
| L 9007 TRIEUX (BDC-1) | A.C. de Bretagne | 12-57 | 6-12-58 | 18-3-60 |
| L 9008 Dives (BDC-4) | Seine Maritime | 5-59 | 29-6-60 | 14-4-61 |



Bidassoa (L 9004)

G. Gyssels, 10-83

D: 1,400 tons 1,750 (av), 4,225 (fl) S: 11 kts

Dim: 102.12 (96.6 pp) × 15.54 × 3.2

A: 3/40-mm AA (I × 3) -1/120-mm mortar Man: 6 officers, 69 men

Electron Equipt: Radar: DRBN 32

M: 2 SEMT-Pielstick 16 PA1 diesels; 2 props; 2,000 hp Range: 18,500/10

Remarks: Design derived from U.S. LST 1 class. Can carry 1,800 tons of cargo, 4 LCVP landing craft, and a maximum of 807 passengers (normally 170 troops). MacGregor-type loading hatches. *Trieux* modified with a hangar for two Alouette-III helicopters. The mortar is mounted at the bow. Sisters *Blavet* (L 9009) and *Argens* (L 9003) stricken 1985; L 9004, 9008 to strike 1986.

4 Champlain-class medium landing ships nal; others: At. Francais de Pouest, Grand-Querilly Bldrs: L 9030, 9031: Brest Arsenal; others: At. Francais de Pouest, Grand-Querilly

| | Laid down | L | In serv. |
|-------------------------|-----------|----------|----------|
| L 9030 Champlain | 1973 | 17-11-73 | 5-10-74 |
| L 9031 Francis Garnier | 1973 | 17-11-73 | 21-6-74 |
| L 9032 DUMONT D'URVILLE | 4-81 | 27-11-81 | 5-2-83 |
| L 9033 JACQUES CARTIER | 10-81 | 28-4-82 | 23-9-83 |

D: 750 tons (1,330 fl; L 9032, 9033: 1,386 fl) S: 16 kts (13 cruising)

Dim: 80.0 (68.0 pp) × 13.0 × 3.0 (2.50 hull) Electric: 360 kw

A: L 9030, 9031: 2/40-mm AA (I × 2) -2/81-mm mortars (I × 2) -2/12.7-mm mg - L 9032, 9033: 2/20-mm AA (I × 2) -2/81-mm mortars (I × 2) -2/12.7-mm mg

Electron Equipt: Radar: 1/DRBN 32

M: 2 SACM V-12 diesels; 2 CP props; 3,600 hp Range: 3,500/13

Man: 3 officers, 15 petty officers, 26 enlisted

Remarks: Bow-door design, embarkation ramp and helicopter platform aft. Cargo: 350 tons. Living quarters for a landing team (5 officers, 15 noncommissioned officers, 118 men) and its 12 vehicles, including Leopard armored personnel carriers. L 9032 and L 9033 are able to transport 180 men; they have a 40-ton capacity bow ramp, improved accommodations, and carry 1 LCVP and 1 LCP landing craft. Their superstructure is one deck higher, and they can carry a 330-ton-vehicle cargo for beaching and 208 tons



Jacques Cartier (L 9033)

16 Flot., French Navy, 1984



Francis Garnier (L 9031)

L. & L. Van Ginderen, 3-84

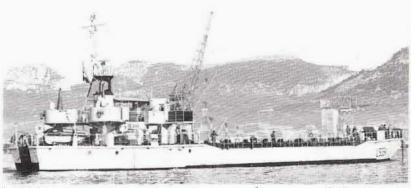
of potable water. All have a helicopter deck for one Alouette-III. A sister ship has been built for Gabon.

• 0 (+. . .) CDIC-class tank landing craft

Remarks: CDIC = Chalands de de'barquement d'infantrie et de chars. A project design to replace the EDICs, with substantially similar characteristics.

• 9 EDIC-class tank landing craft

| L L | | | L | | |
|--------|---------|--------|----------|--------|---------|
| L 9091 | 7-1-58 | L 9096 | 11-10-58 | L 9073 | 1968 |
| L 9093 | 17-4-58 | L 9070 | 30-3-67 | L 9074 | 22-7-69 |
| L 9094 | 24-7-58 | L 9072 | 1968 | L 9083 | 1964 |



L 9094

G. Gyssels, 11-82

D: 250 tons (670 fl)
 S: 8 kts
 Dim: 59.0 × 11.95 × 1.3 (1.62 fl)
 A: 2/20-mm AA (I × 2)
 M: 2 MGO diesels; 2 props; 1,000 hp
 Range: 1,800/8
 Man: 5 petty officers, 12 men

Remarks: EDIC = Engins de débarquement pour infanterie et chars. L 9082 and L 9083: 310 tons (685 fl). Can carry 11 trucks or 5 LVTs. Two each can be carried aboard the Ouragan and the Orage. L 9095 transferred to Senegal, 1-7-74. L 9071 stricken 19-4-77, L 9092 and L 9082 stricken 1981. L 9084 reclassified BAME (repair barge). L 9096 was loaned to Lebanon 7-11-83 and returned in 1-85: 1 9073, L 9091 and L 9093 are to be stricken during 1986.

21 repeat U.S. LCM (8)-class landing craft (CTM 4, 5, 11; C.N. Auroux, Arcachon) Bldr: CMN, Cherbourg

| | In serv. | | In serv. | | In serv. | | In serv. |
|-------|----------|-------|----------|--------|----------|-----------|----------|
| CTM 1 | 19-10-82 | CTM 5 | 21-12-82 | CTM 9 | 25-5-83 | CTM 13 | 11-4-84 |
| CTM 2 | 27-10-82 | CTM 6 | 16-2-83 | CTM 10 | 22-6-83 | CTM 14 | 8-8-84 |
| CTM 3 | 12-82 | CTM 7 | 3-83 | CTM 11 | 20-7-83 | CTM 15 | 25-10-84 |
| CTM 4 | 2-12-82 | CTM 8 | 1983 | CTM 12 | 11-8-83 | CTM 16-21 | 1985 |

D: 48 tons (150 fl) S: 9.5 kts Dim: 23.80 × 6.35 × 1.25

M: 2 Poyaud 520 V8 diesels; 2 props; 480 hp Range: 380/8.0 Fuel: 3.4 tons Man: 6 tot.

Remarks: Repeat version of earlier CTM 1-16. Cargo capacity: 90 tons. A small navigational radar is fitted.

AMPHIBIOUS WARFARE SHIPS (continued)

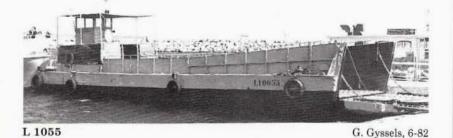


CTM 18

LV (R) B. Prézelin, French Navy, 4-85

• 6 U.S. LCM (3) class

LCM 1035 LCM 1036 LCM 1055 LCM 1056 LCM 1057 LCM 1058



D: 26 tons (52 fl)
 S: 8 kts
 Dim: 15.25 × 4.3 × 1.2
 M: 2 Gray Marine 64 HN9 diesels; 2 props; 450 hp
 Cargo: 30 tons

Remarks: Transferred 6-58, except for LCM 1057 and 1058, built at La Réunion and delivered 3-83 for local service at Mayotte Naval Base. LCM 1031, 1045, 1052, 1074, and 1076 stricken 1984-85.

EXPERIMENTAL SHIPS

Note: For smaller experimental trials tenders (under 300 tons), see Miscellaneous Service Craft entry at end of France section.

• 0 (+1) Mine countermeasure experimental ship

Bldr Laid down L In serv.
A 785 Néreide Lorient Ars. 1986-88

D: 720 tons, (1,000 ft) S: 15 kts Dim: 56.50 (51.70 pp) × 11.00 × 3.63

A: . . .

Electron Equipt: Radar: . . . — Sonar: . .

M: 2 SACM MGO 175-V12-RVR diesels; 2 CP props; 2,500 hp

Remarks: Typed BEGM—Bâtiment d'Expérimentation de la Guerre des Mines. Ordered 11-10-84. Uses same hull and machinery as the new hydrographic survey ships. A second unit was in the 1984-88 Plan; possibly canceled.

 1 missile-range tracking ship cone, Italy
 Bldr: Cantieri Riuniti de Adriatico, Monfal-

A 603 HENRI POINCARÉ (ex-Maina Morasso)

L In serv.
10-60
1-3-68



Henri Poincaré (A 603)

DCAN, 1974

D: 22,640 tons (23,430 ft) S: 15 kts Dim: 180.00 (160.00 pp) × 22.20 × 9.40 A: 2/20-mm AA Electron Equipt: Radar: 1/DRBV 22D, 2/Gascogne, 1/Savoie M: 1 set Parsons GT; 1 prop; 10,000 hp; bow-thruster Electric: 7,355 kw Boilers: 2 Foster-Wheeler; 48 kg/cm², 445°C Range: 11,800/13.5 Man: 22 officers, 144 petty officers, 159 men, and several civilian technicians

Remarks: Flagship of Group M (the Naval Test and Measurement Group), which makes at-sea tests, takes measurements, and conducts experiments, as requested by the Navy or any other organization, civilian or military. The chief mission of the Henri Poincaré is to measure the trajectory of ballistic missiles (MSBS and SSBS) fired from the experimental station at Landes or from missile-carrying nuclear submarines and to compute their flight characteristics, especially from re-entry to impact. Her secondary mission is to assist the flag officer in controlling the naval and air elements in the test area, particularly recovery and security.

A former Italian tanker, the ship was entirely rebuilt by DCAN at Brest between 1964 and 1967, during which time she was given three radars for tracking and trajectory-measuring in ballistic tests and a sonar dome. She also has: an automatic tracking station; celestial position-fixing equipment; a camera-equipped theodolite; infrared equipment; a Transit navigational system; aerological, meteorological, and oceanographic equipment; excellent communications equipment; a programming and transcribing center for all experiments and installations; and a platform and hangar for two heavy or five light helicopters. Refitted 1-8-79 to 1-6-80, with 2 Gascogne tracking radars in place of original 2 Bearn, as well as other alterations. Received Syracuse SATCOMM system in 1983.

• 1 Commandante Rivière-class sonar trials ship, former frigate

Laid down L In serv.
A 753 COMMANDANTE RIVIÈRE (ex-F 733) 4-57 11-10-58 4-12-62

D: 2,100 tons (fl) **S:** 16 kts **Dim:** 103.00×12.52 (11.8 wl) \times . . .

A: 1/40-mm AA -2/12.7-mm mg (I \times 2)

Electron Equipt: Radar: 1/Decca 1226, 1/DRBV-22A

Sonar: DSBV 61 towed passive array; DUBV 43B VDS

M: 4 SEMT-Pielstick 12 PC-series diesels; 2 props; 16,000 hp

Man: 9 officers, 14 chief petty officers, 34 petty officers, 58 men + 37 technicians Electric: 1,280 kw Fuel: . . . Range: . . .

Remarks: Converted during 1985 as replacement for the former frigate L'Agenais (A 784) in towed sonar array trials. The 100-mm guns, MM 38 Exocet missiles were removed, and a 40-mm AA replaced the 305-mm ASW mortar. A new, broader stern of about 20-m length replaced the original and supports the DUBV 43 variable-depth sonar hoist equipment removed from the stricken destroyer Casabianca (D 631). The original hull-mounted SQS-17 sonar has been replaced, possibly by DUBV 24. Original 26-kt speed either reduced or restricted. Intended to test interface between hull-mounted, VDS, and passive linear towed hydrophone array sonars. To recommission 1-86.

♦ 1 guided-missile trials ship Bldr: A. G. Weser, Bremen

A 610 ILE D'OLÉRON (ex-Lazarettschiff München, 1939 29-8-45 (French Navy)



Ile d'Oléron

G. Gyssels, 6-83

D: 5,500 tons (6,500 fl) S: 14.5 kts Dim: 115.05 (107.00 pp) × 15.24 × 6.50

A: 1/Crotale syst. (VIII × 1) —, . ./MM 40 Exocet Electron Equipt: Radar: 1/DRBN 32, 1/DRBV 22C, 1/DRBV 50, 1/DRBI 10

M: 2 M.A.N. 6-cyl. diesels; 1 prop; 3,500 hp Electric: 1,240 kw

Fuel: 340 tons Range: 5,900/14; 7,200/19 Man: 9 officers, 46 petty officers, 113 men

Remarks: Taken from the Germans as a prize of war and used as a transport until converted, 1957-58, to an experimental ship for missiles. Besides the radars listed, she carries guidance radars for the systems under test. Used for MM 38 Exocet trials and, since 1977, for Crotale. Trials with MM 40 Exocet began 2-80. Helicopter deck aft.

♦ 1 electronics experimental ship

Bldr L In serv.
A 644 Berry (ex-*Medoc*) Roland Werft, Bremen 10-9-58 26-11-64



Berry (A 644)

G. Gyssels, 6-85

EXPERIMENTAL SHIPS (continued)

D: 1,150 tons (2,700 ft) S: 15 kts Dim: 86.7 (78.5 pp) × 11.6 × 4.6 A: 2/20-mm AA (I × 2) M: 2 MWM diesels; 1 prop; 2,400 hp Range: 7,000/15

Remarks: An ex-stores ship, converted 1976-77 at Toulon and recommissioned 2-77.

Used for trials with electronic-warfare equipment. Painted white. Former sister Aunis, a sonar-trials ship, was stricken 1-7-81.

 1 ex-U.S. Agile-class ocean minesweeper geon Bay, Wisc. In serv. 3-2-57

Bldr: Peterson Builders, Stur-

A 769 NARVIK (ex-M 609, ex-MSO 512)



Narvik (A 769)

LV (R) B. Prézelin, French Navy, 6-85

Remarks: Since recommissioning 1-1-76, conducts experiments with the AP-4 acoustic sweep and the DUBM 21 series. For data, see ex-U.S. *Agile* class under Mine Warfare Ships. Retains 1/40-mm AA.

Note: The Sirius-class mine-countermeasures trials ship Bételgeuse (A 747) was stricken 1982, and the U.S. Adjutant-class trials minelayer Jacinthe (A 680) was stricken 15-1-82.

♦ 1 underwater-research ship

Budget Bldr Laid down L In serv. A 646 TRITON 1967 Lorient Ars. 1967 7-3-70 20-1-72



Triton (A 646)

G. Gyssels, 6-85

D: 1,410 tons (1,510 fl)
 S: 13 kts
 Dim: 74.00 (68.00 pp) × 11.85 × 3.65
 M: 2 MGO V-12 ASHR diesels, electric drive; aft: 1/Voith-Schneider 30 G cycloidal propeller; 880 hp; forward: 2 electric motors, 1/Voith-Schneider 26 G cycloidal propeller; 530 hp

Electric: 640 kw Range: 4,000/13

Man: Ship's company: 4 officers, 44 men; divers: 5 officers, 12 men

Remarks: Assigned to GISMER (Groupe d'Intervention sous la Mer) for deep-sea diving and observation. Has a decompression chamber, laboratories, television, navigational radar, sonar for deep-water area search, etc. Helicopter platform. Good maneuverability at very slow speeds; capable of remaining positioned above a point 300 meters deep. Can be used in submarine-rescue operations. Her 15-ton crane can lower and raise: (a) a 13.5-ton tethered bell that can be sunk to 250 meters and can carry two four-man diving teams; (b) the two-man submarine Griffon, which is capable of diving to 600 meters for underwater exploration; (c) diving devices, sleds (troika, automatically guided). The Griffon has a manipulator arm, and other characteristics are:

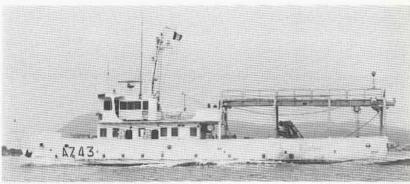
D: 14.2 to 16.7 tons $\,$ Dim: $7.8\times2.3\times3.1$ (height) $\,$ M: 1 electric motor Range: 24 hours/4 kts

Note: The Chamois-class local support tender Isard is also subordinated to GISMER and supports the ERIC (Engin de Recherche et d'Intervention par Cable) wire-guided

submersible. For data, see the *Chamois* class under Miscellaneous Auxiliary Ships. The submersible craft-support ship *Gustave Zedé* (A 759; ex-*Marcel le Bihan, ex-German Grief*) was stricken during 1984.

♦ 1 ASW weapons-trials support tender

Bldr L In serv.
A 743 DENTI DCAN, Toulon 7-10-75 15-7-76



Denti (A 743)

G. Gyssels, 6-83

D: 170 tons (fl) S: 12 kts Dim: 34.70 (30.00 pp) × 6.60 × 2.27

Electron Equipt: Radar: 1/Decca . .

M: 2 Baudouin DP 8 diesels; 2 props; 960 hp

Range: 800/12 Man:

Remarks: Employed by DCAN Toulon in support of weapons trials. Essentially a recovery craft, with an overhead rail gantry aft. Carries divers also.

OCEANOGRAPHIC RESEARCH SHIPS

• 1 expeditionary ship

Bldr Laid down L In serv.
A 757 D'Entrecasteaux Brest 7-69 30-5-70 10-10-70



D'Entrecasteaux (A 757)

Skyfotos, 3-82



D'Entrecasteaux (A 757)

L. & L. Van Ginderen, 5-82

D: 2,058 tons (2,440 fl) **S**: 15 kts **Dim**: $89.0 \times 12.0 \times 3.9$

Electron Equipt: Radar: 2/DRBN 32

M: 2 diesel engines, electric drive; 2 CP props; 2,720 hp; for extremely slow maneuvering: 2 retractable Schöttel propellers, 1 fwd, 1 aft

Range: 10,000/12

Man: 6 officers, 73 men, up to 38 Hydrographic Service scientists and technicians

Remarks: For oceanographic research and hydrographic duties. Has a dynamic mooring/maneuvering system permitting station-keeping in 5,000-m depths. Can take

OCEANOGRAPHIC RESEARCH SHIPS (continued)

soundings and surveys to a depth of 6,000 meters. Helicopter platform and hangar (Alouette-III helicopter). Electrohydraulic oceanographic equipment cranes, one landing craft, three hydrographic launches, hull-mounted scanning sonar. Painted white.

♦ 1 underwater archeological research ship

Bldr L A 789 Archéonaute Auroux, Arcachon 25-8-67



Archéonaute (A 789)

J.-C. Bellonne, 1972

D: 100 tons (120 fl) S: 12 kts Dim: 29.3 × 6.0 × 1.7

M: 2 Baudouin diesels; 2 CP props; 600 hp

Man: 2 officers, 4 men, 3 scientific research personnel, 6 divers

Remarks: Ordered by the Office of Cultural Affairs, manned by Navy personnel. Laboratory and workshops, decompression chamber, underwater television.

HYDROGRAPHIC SURVEY SHIPS

| ♦ 0 (+4) new construction | | Bldr: Lorient Arsenal | | | |
|---|-----------|-----------------------|----------|--|--|
| | Laid down | L | In serv. | | |
| A 791 La Pérouse | 1985 | | * * * | | |
| A 792 Borda | 1985 | * * * | | | |
| A 793 LA PLACE | | | | | |
| A 794 Arago | | | | | |

D: 720 tons light (1,000 ft) S: 15 kts Dim: 56.50 (51.70 pp) \times 11.00 \times 2.60 M: 2 S.A.C.M. MGO Type 175 V 16SHR diesels; 1 CP prop; 2,200 hp—plus a 200-hp swivelling propulsor

Range: 6,000/12 Man: 29 crew + 11 hydrographic survey party

Remarks: First two ordered 24-7-84. This program replaces the one 2,000-ton Type BH1 and two 800-ton Type BH2 described in the previous edition. The ships will carry the Thomson-CSF TSM 5425 wreck-identification sonar. They will replace four older coastal survey ships. A near-sister will serve as a mine-warfare trials ship.

♦ 2 converted ex-trawlers Bldr: Gdynia, Poland

| | L | in serv, with French Navy |
|--|------|---------------------------|
| A 756 L'Espérance (ex-Jacques Coeur) | 1962 | 12-7-69 |
| A 766 L'Estafette (ex-Jacques Cartier) | 1962 | 16-11-72 |



L'Espérance (A 756)

L. & L. Van Ginderen, 12-84

D: 900 tons (1,300 fl) **S:** 13.5 kts **Dim:** 63.45 (59.75 pp) × 9.82 × 5.85 (fl) **M:** 2 M.A.N. diesels; 1 prop; 1,870 hp **Range:** 7,500/13

Man: 3 officers, 11 petty officers, 29 enlisted

Remarks: Former oceangoing fishing trawlers, purchased 1968-69. Carry one survey launch. Large oceanographic winch on stern, articulated crane amidships. Painted white.

Bldr L In serv.
A 758 La Recherche Ziegler, Dunkerque 4-51 19-3-62
(ex-Guyane) (in French Navy)



La Recherche (A 758)

C. Martinelli, 1981

D: 810 tons (910 fl)
 S: 13.5 kts
 Dim: 67.5 (62 pp) × 10.4 × 4.5
 M: 1 Werkspoor MABS 398 diesel; 1 prop; 1,535 hp
 Range: 3,100/10
 Man: 2 officers, 10 petty officers, 26 men

Remarks: Operated for the French Overseas Ministry. Bought in 1960. Hull bulged for improved stability. Carries two inshore survey launches. Painted white.

♦ 2 Astrolabe-class survey ships

| | Bldr | Laid down | L | In serv. |
|-----------------|----------------|-----------|---------|----------|
| A 780 Astrolabe | Seine Maritime | 1962 | 27-5-63 | 7-64 |
| A 781 Boussole | Seine Maritime | 6-62 | 11-4-63 | 7-64 |



Astrolabe (A 780)

Skyfotos, 9-82

D: 330 tons (440 fl)
 S: 12.5 kts
 Dim: 42.7 (36.65 pp) × 8.45 × 2.9
 M: 2 Baudouin DV 8 diesels; 1 CP prop; 800 hp
 Range: 4,000/12
 Man: 1 officer, 32 men

Remarks: Air-conditioned. Carry two 8.8-m Type VH8 survey launches equipped with the *Trident* radiolocation system; they are later to be fitted with TORAN. Painted white. Formerly had "P"-series pendants, and A 780 at one time carried 1/40-mm AA, 2/12.7-mm mg.

♦ 1 inshore survey ship

Bldr L In serv. (French Navy)
A 794 CORAIL (ex-Marc Joly) Thuin, Belgium 1967 11-4-75



Corail (A 794)

1975

HYDROGRAPHIC SURVEY SHIPS (continued)

D: 54.78 tons (light) S: 10.3 kts Dim: 17.8 × 4.92 × 1.83
 M: 1 Caterpillar diesel; 1 prop; 250 hp Man: 7 tot.

REMARKS: Ex-fishing boat, operates in the Pacific. Painted white.

SUPPORT TENDERS

• 1 multi-purpose repair ship

Budget Bldr Laid down L In serv.
A 620 Jules Verne 1961 Brest Ars. 1969 30-5-70 1-6-76
(ex-Achéron)



Jules Verne (A 620)

J.-C. Bellonne, 1982

D: 6,485 tons (10,250 fl) S: 18 kts Dim: 147.0 × 21.56 × 6.5

A: 2/40-mm AA (I × 2) M: 2 SEMT-Pielstick T2 PC diesels; 1 prop; 11,200 hp

Electric: 3,800 kw Range: 9,500/18 Man: 16 officers, 150 petty officers, 116 men

Remarks: Six years after being launched as an ammunition ship, the uncompleted *Jules Verne* was converted to a floating workshop to provide support to a force of from three to six surface warships. Has significant capabilities for both regular maintenance and battle-damage repair: mechanical, engine, electrical, sheet-metal, electronic workshops, etc. She carries a stock of torpedoes and other munitions. Has a platform and hangar for two Alouette-III helicopters. Operates in support of the Indian Ocean Flotilla.

• 5 Rhin class Bldr: Lorient Arsenal (differences as noted)

| | Budget | Purpose | Laid down | L | In serv. |
|-------------|--------|--------------|-----------|---------|----------|
| A 615 Loire | 1962 | Minesweepers | 9-7-65 | 1-10-66 | 10-10-67 |
| A 621 RHIN | 1959 | Electronics | 24-4-61 | 17-3-62 | 1-3-64 |
| A 622 Rhône | 1960 | Submarines | 23-2-62 | 8-12-62 | 1-12-64 |



Loire (A 615) — helicopter hangar, 3 radars, IFF interrogator

L. & L. Van Ginderen, 5-85



Rhône (A 622) - helo deck, no hangar (A 615 similar) L. & L. Van Ginderen, 1-85

D: 2,075 tons (2,445 fl) **S:** 16.5 kts **Dim:** 101.05 (92.05 pp) \times $13.1 <math>\times$ 3.65

A: 3/40-mm AA (I×3) Electron Equipt: Radar: 2/DRBN 32

M: 2 SEMT-Pielstick 16 PA 2V diesels; 1 prop; 3,200 hp Electric: 920 kw Range: 13,000/13

Man: A 621, 622: 6 officers, 42 petty officers, 76 men (A 615: 9 officers, 131 men)

Budget Purpose Laid down L In serv. A 618 RANCE 1964 Experimental 8-64 5-5-65 5-2-66



Rance (A 618)

G. Gyssels, 6-82

A: None Electron Equipt: Radar: 1/DRBN 32, 1/DRBV 22E EW: ARBR/ARBA 10

M: SEMT-Pielstick 12 PA 4 diesels; 3,600 hp Man: 10 officers, 39 petty officers, 69 men

Budget Purpose Bldr Laid down L In serv.
A 617 Garonne 1964 Repair Lorient 11-63 8-8-64 9-65



Garonne (A 617)

J.-C. Bellonne, 1977

D: 2,320 tons
 S: 15 kts
 Dim: 101.5 (92.05 pp) × 13.8 × 3.7
 A: 1/40-mm AA — 2/20-mm AA
 Electron Equipt: Radar: 1/DRBN 32

M: 2 SEMT-Pielstick 12 PA 4 diesels; 1 prop; 3,600 hp Range: 13,000/13

Man: 6 officers, 39 petty officers, 69 men

Remarks: Rhin has 1,700 m³ of store rooms and 700 m³ of workshops, many air-conditioned. She has a hangar and flight deck for one helicopter, which is equipped to serve minesweepers with spare sweep gear, cable, and repairs. Rhône is fitted to service submarines; helicopter deck but no hangar. Loire has a helicopter deck and hangar. All have one 5-ton crane with a 12-meter reach. The profile of the Rance is different from that of the other ships of this group; an additional deck has been fitted between her navigating bridge and her stack. She has a laboratory, radioactive decontamination stations, and carries up to three Alouette helicopters, using both the stern and her hangar roof as landing platforms. Garonne was designed for overseas service. She has metalworking and carpentry shops, an extra deck with lower overhead, and a 30-ton crane mounted in the center of her fantail; no helicopter facilities.

Note: BAME 9084, the former EDIC-class landing craft L 9084, altered as an electronics repair craft and stationed at Mayotte, the Comoros, has been stricken. BAME = Batiment-Annexe-Électronique.

FLEET REPLENISHMENT SHIPS

| lacktriangledown 3 (+1) Durance-class fleet oilers | | | |
|--|-----------|-------------|--|
| Laid down | L | In serv. | |
| 10-12-73 | 6-9-75 | 1-12-76 | |
| | Laid down | Laid down L | |

A 629 DURANCE 10-12-73 6-9-75 1-12-76 A 607 MEUSE 2-6-77 2-12-78 2-8-80 A 608 VAR 12-78 9-5-81 29-1-83 A 630 MARNE 4-8-82 6-2-85 10-86

D: 7,600 tons (17,800 fl) S: 20 kts

Dim: 157.3 (149.0 pp) × 21.2 × 8.65 (10.8 fl)

A: 1/40-mm AA - 2/20-mm AA (I × 2) - A 629: 2/40-mm AA (I × 2) - no 20-mm

M: 2 SEMT-Pielstick 16 PC 2.5 V400 diesels; 2 CP props; 20,000 hp

Electric: 5,400 kw Fuel: 750 tons Range: 9,000/15

Man: 8 officers, 62 petty officers, 89 men (Var: 10 officers, 62 p.o., 90 men)

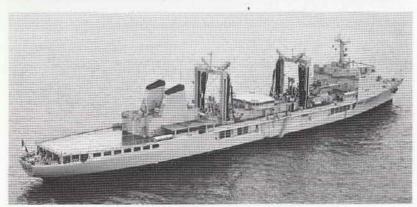
Remarks: Two dual solids/liquids underway-replenishment stations per side. Can supply two ships alongside and one astern. Durance: 7,500 tons fuel oil, 1,500 tons diesel fuel, 500 tons JP-5, 130 tons distilled water, 170 tons fresh provisions, 150 tons munitions, 50 tons spare parts; Meuse: 5,090 tons fuel oil, 4,014 tons diesel, 1,140 tons JP-5, 250 tons distilled water, 180 tons provisions, 122 tons munitions, and 45 tons spare parts. Var and No. 4: 5,090 tons fuel oil, 3,310 tons diesel, 1,090 tons JP-5,260 tons distilled water, 170 tons ammunition, 180 tons provisions, 15 tons spares. Hangar

FLEET REPLENISHMENT SHIPS (continued)



Durance (A 629) - tank deck plated in at sides

P. Voss, 10-83



Meuse (A 607) - tank deck open-sided

Pradignac & Leo, 6-84



Var (A 608) - Syracuse SATCOMM antennas atop bridge

16 Flot., French Navy, 1983

for one Alouette-III (*Var:* Lynx) and flight deck for larger helicopters. Superstructure before the bridge one deck higher in *Meuse*. In *Meuse* the 40-mm AA is aft; in *Var* it is forward. *Var* and Marne are equipped as flagships for a major area commander and can accommodate 257 persons. The forward superstructure block is extended aft by 8 meters to provide increased staff accommodations, and the two beam-mounted stores cranes immediately abaft the bridge are replaced by a single, centerline crane; the Syracuse SATCOMM system is fitted. The fifth ship l'Atlantique, which will resemble A 608 and A 630, was ordered 3-84 from CNM, La Seyne, for an undisclosed foreign customer; laid down 3-5-85. A fifth for the French Navy was to be ordered in 1986 under the 1984-88 Plan. A near sister is building in Australia for the R.A.N.

TRANSPORT OILERS

N. . .

♦ 0 (+1) chartered freighting tanker

Bldr: Ch. de l'Atlantique, St. Nazaire

Laid down L In serv.

Remarks: A 32,000 deadweight ton freighting tanker was ordered 20-3-85 as a replacement for *Port Vendres*. The ship will be chartered from the owners, SOCATRA, Bordeaux, and SOFLUMAR, Paris, and is intended to operate between the Persian Gulf and La Réunion. There will be one underway replenishment station per side.

• 1 chartered tanker B

Bldr: Brodograditiste, Uljanik, Yugoslavia

PORT VENDRES (ex-Mont-Agel, ex-Wiiri) (L: 17-2-73; in serv. 3-73)



Port Vendres

LV (R) B. Prézelin, French Navy, 6-85

D: Approx. 31,000 tons (fl) S: 15.5 kts Dim: 175.10 (163.20 pp) × 25.05 × 9.68

M: 1 Burmeister & Wain 6K74EF diesel; 1 prop; 10,600 hp

Electric: 1,544 kw Man: 27 tot.

Remarks: 15,285 grt/25,253 dwt. Chartered 4-8-82 and to be returned to owners by 1988. Cargo capacity 32,088 m³ liquid. Has a 1,200-hp KaMeWa tunnel bow-thruster. Can refuel over the stern.

2 Punaruu class

Bldr: Trosik Verkstad, Brevek, Norway

In serv. (French Navy)

A 625 Papenoo (ex-Bow Queen) A 632 Punaruu (ex-Bow Cecil) 9-11-71 16-11-71



Papenoo (A 625)

French Navy, 1983

D: 1,195 tons light (4,050 fl) S: 13 kts Dim: 83.00 (70.70 pp) \times 13.85 \times 5.50 Electron Equipt: Radar: 1/Decca RM 316

M: 2 Normo LSMC-8 diesels; 1 CP prop; 2,050 hp Electric: 290 kw Fuel: 174 tons Range: 8,000/11.5 Man: 2 officers, 20 men

Remarks: 1,119 grt, 2,889 dwt. Former Norwegian solvent tankers purchased at the end of 1969. Highly automated ships. Capacity: 2,554 m³. Ten washable "inox" cargo tanks that can accept any liquid. Astern fueling capability. Bow-thruster equipped (530 kw). Operate primarily in the Pacific

LIGHT-FUELS TANKER

A 619 ABER WRACH CNM

Bldr CNM, Cherbourg Laid down 11-62 L 11-63

In serv. 27-3-66



Aber Wrach (A 619)

L. & L. Van Ginderen, 1984

L

12-85

In serv.

10-87

D: 1,220 tons (3,500 ft) S: 12 kts Dim: 86.55 (80.0 pp) × 12.2 × 4.8 A: 1/40-mm AA M: 1 SEMT-Pielstick 6 PL diesel; 1 CP prop; 2,000 hp Electron Equipt: Radar: 1/DRBN 32—EW: ARBR/ARBA 10 Range: 5,000/12 Man: 3 officers, 45 men

Remarks: Cargo capacity: 2,200 tons. Carries diesel oil, jet fuel, and gasoline in pointto-point service. Capable of astern underway fueling, or anchored alongside.

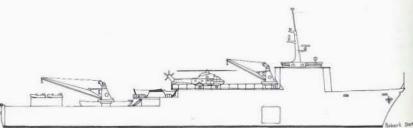
SUPPORT SHIPS FOR NUCLEAR WEAPONS TESTING

Note: The seven ships described below were financed by and are operated for DIRCEN

— Direction des centres d'expérimentation nuclear—the French nuclear-weapon
testing agency, in support of activities at Muraroa in the South Pacific. They are
manned by the French Navy.

• 0 (+1) BTMS small dock landing ship

Bldr Laid down
A. . . N. . Dubigeon, Nantes 11-84



BTMS

SUPPORT SHIPS FOR NUCLEAR WEAPONS TESTING (continued)

D: 4,200 tons (4,880 fl) **S:** 15 kts **Dim:** 113.50 (105.00 pp) \times 17.00 \times 4.24 A: . . . - 2/Super Puma helicopters

Electron Equipt: Radar: 1/navigational

M: 2 SACM MGO 195 V12 RVR diesels; 2 CP props; 4,800 hp—side-thruster Electric: 1,600 kw Range: 6,000/12 Fuel: . . .

Endurance: 30 days Man: 6 officers, 17 petty officers, 29 enlisted + 50 passengers

Remarks: BTMS = Bâtiment de Transport Moyen et de Soutien, intended for Directorate of Nuclear Experimentation for use between Papeete and the Muraroa test center. Miniature LSD-design, with 78.0 × 11.8-m docking well aft for one EDIC landing craft. Cargo capacity: 1,100 tons. Can load vehicles via stern dock door/ramp and starboard side ramp. No hangar, Ordered 12-83. Other reports indicate keel not to be laid until 1986.

Note: The following six ships were originally ordered to support Force de Surface à Missions Civiles (Civil Missions Surface Force) duties on the Atlantic coast of France.

♦ 2 Type RR 4000 class tug/supply vessels

Bldr: Breheret, Conéron, Nantes

L In serv. L In serv. A 634 RARI A 635 REVI 16-4-84 2-85 15-5-84 3-85



Rari (A 634)

LV (R) B. Prézelin, French Navy, 7-84

D: 900 tons light (1,450 fl) **S:** 14.5 kts **Dim:** 51.00 (49.50 wl) \times 12.60 \times 4.00 Electron Equipt: Radar: 1/Decca . . . nav. Range: 5,000/12 M: 2 SACM Type 195 V12 RVR; 2 CP props; 4,000 hp Man: 2 officers, 18 men

Remarks: Can carry 18 passengers. Bollard pull: 47 tons. Two 2.5-ton thrust sidethrusters. Have a 14-ton crane aft, plus a quadrantial gantry at the extreme stern. Two water cannons for firefighting. Can carry fuel cargo.

♦ 1 Type RR 2000 (Modified Chamois) class

Bldr Laid down L In serv. A 633 TAAPE de la Perrière, Lorient 22-10-82 14-4-83 30-6-83



Taape (A 633)

BAN Lanveoc-Poulmic, French Navy, 1984

D: 383 tons (505 fl) S: 14.2 kts Dim: 41.02 (38.50 pp) × 7.5 × 3.18 M: 2 SACM M60 V16 ASHR diesels; 2 CP Kort-nozzle props; 2,200 hp Range: 7,200/12 Man: 2 officers, 18 men

REMARKS: A variation of the FISH-class design also used in the Chamois-class tenders. 24.8 bollard pull. Can carry 100 tons of cargo on the long, open afterdeck. Transported to Muraroa in the landing ship Orage in 4-84.

• 3 seagoing tugs Bldr: SFCN, Villeneuve-la-Garenne

| | Laid down | L | In serv |
|--------------|-----------|---------|---------|
| A 636 Maito | 24-6-83 | 6-1-84 | 27-2-84 |
| A 637 Maroa | 30-8-83 | 20-1-84 | 30-3-84 |
| A 638 Manini | 11-84 | -85 | -88 |



Maroa (A 637)

1984

D: 250 tons (278 fl) **S:** 11 kts **Dim:** 27.60 (24.50 wl) \times 8.90 \times 3.50 M: 2 SACM Type 175 6L RUR diesels; 2 Voith-Schneider vertical cycloidal props; 1,280 hp

Range: 1,200/11 Man: 6 tot. + 4 passengers.

Remarks: For service at Muraroa. Bollard pull: 12 tons. Have a firefighting water

MISCELLANEOUS AUXILIARY SHIPS

♦ 6 (+2+2) Chamois-class local support or diving tenders Bldr: Ch. de la Perrière, Lorient

| | Laid down | L | In serv. |
|--------------------------------|-----------|---------|----------|
| A 767 Chamois | | 30-4-76 | 24-9-76 |
| A 768 Elan | 16-3-77 | 28-7-77 | 7-4-78 |
| A 774 CHEVREUIL | 15-9-76 | 8-5-77 | 7-10-77 |
| A 775 Gazelle | 30-12-76 | 7-6-77 | 13-1-78 |
| A 776 Isard | 2-11-77 | 2-5-78 | 15-12-78 |
| A 779 TAPATAI (ex-Silver Fish) | | 1971 | 27-3-81 |
| A 611 VULCAIN | | 20. v | 1986 |
| A 612 PLUTON | | | |
| A 613 ACHÉRON | | | |
| A 614 STYX | | | 1988 |
| | | | |



Chevreuil (A 774) - stern gantry dismounted

L. & L. Van Ginderen, 8-84



Isard (A 776) - white-painted divers' support ship

M. Bar, 1979

D: 305 tons light (505 fl) S: 14.5 kts Dim: 41.5 (36.96 pp) × 7.5 × 3.18 M: 2 SACM MGO V16 AFHR diesels; 2 CP Kort-nozzle props; 2,200 hp Range: 7,200/12 Man: 2 officers, 16 petty officers, 2 men

REMARKS: Except for a 5.6-ton crane, the first four are identical to the 14 merchant FISH class designed for the supply of petroleum platforms. Hydraulic 50-ton stern

MISCELLANEOUS AUXILIARY SHIPS (continued)

crane mounted on A 767, A 774. All but A 776 can carry 100 tons dry cargo on deck or 125 tons fuel and 40 tons water (or 65 tons fuel/125 tons water). A 768 and A 775 primarily used as water tankers. Can be used for coastal towing and cleaning up oil spills. Two rudders and an 80-hp bow-thruster. After winch with 28-ton bollard pull. Can be used as transports for 28 passengers, as minelayers, or as torpedo retrievers. Isard is equipped as a divers' support ship and tender for the ERIC wire-guided submersible (2 tons, 4 m overall, 600 m diving depth). She has a ULISM decompression chamber capable of simulating pressures to a water depth of 150 m. She also has a longer aft structure, supporting divers' rubber dinghys and a small helicopter deck; the ship is subordinated to GISMER. A 779, a former merchant unit of this class, was purchased at Noumea in 1979 and commissioned for service in support of the Pacific Test Center.

The first two of four additional units, intended to replace the U.S. MSC class mine-clearance, diver-support ships, were ordered 11-10-84. They will resemble Isard (A 776) and will have a 13.7-kt speed.

NET TENDERS

1 seagoing net tender

Bldr Laid down In serv. A 731 TIANÉE 1-4-73 1-11-73 8-7-75 Brest Ars.



Tianée (A 731)

D: 842 tons (905 fl) **S:** 12 kts **Dim:** $54.3 \times 10.6 \times ...$ M: 2/480-kw diesel generator sets, 1/880-kw electric motor; 1 prop; 1,200 hp Range: 5,200/12 Man: 1 officer, 12 petty officers, 24 men

Remarks: Living quarters air-conditioned, transverse bow-thruster. Used primarily as a mooring-buoy tender. Stationed at Papeete.

5 U.S. AN 93 class

| Bldr | L | In serv. |
|-----------------------------|--|---|
| A.C. de la Rochelle-Pallice | 23-9-54 | 24-6-55 |
| A.C. Seine Maritime | 3-6-54 | 25-3-55 |
| A.C. Seine Maritime | 6-7-54 | 24-6-55 |
| Penhoët | 18-2-54 | 25-3-55 |
| Penhoët | 21-11-53 | 15-2-55 |
| | A.C. de la Rochelle-Pallice A.C. Seine Maritime A.C. Seine Maritime Penhoët | A.C. de la Rochelle-Pallice 23-9-54 A.C. Seine Maritime 3-6-54 A.C. Seine Maritime 6-7-54 Penhoët 18-2-54 |



Scarabée (A 764)

L. & L. Van Ginderen, 8-84

D: 770 tons (850 fl) **Dim:** 46.28 (44.5 pp) \times 10.2 \times 3.2

A: 1/40-mm AA - 4/20-mm (I × 4) AA

Electron Equipt: Radar: 1/Decca . . . nav.
M: 2 SEMT-Pielstick PA-1 diesels, electric drive; 1 prop; 1,600 hp

Fuel: 125 m³ diesel oil Range: 5,200/12

Man: 1 officer, 36 men

Remarks: U.S. "Offshore" mutual assistance. One sister built for Spain, two others built in Italy. Used as mooring-buoy and salvage tenders, except A 760, used as a torpedo retriever with no armament (A 764 also unarmed).

♦ 3 La Prudente-class port netlayers

| | Bldr | L | In serv. |
|-----------------------|-----------------------------|---------|----------|
| Y 749 LA PRUDENTE | A.C. de la Manche | 13-5-68 | 27-7-69 |
| Y 750 La Persévérante | A.D. de la Rochelle-Pallice | 14-5-68 | 3-3-69 |
| Y 751 La Fidèle | A.C. de la Manche | 26-8-68 | 10-6-69 |



Persévérante (Y 750)

G. Gyssels, 7-82

D: 446 tons (626 fl) S: 10 kts Dim: 43.5 (42.0 pp) × 10.0 × 2.8 M: 2 Baudouin diesels, electric drive; 1 prop; 620 hp Electric: 440 kw Range: 4,000/10 Man: 1 officer, 8 petty officers, 21 men

Remarks: Used as mooring-buoy tenders. Lifting power via pivoting gantry forward: 25

Bldr: IMC, Rochefort sur ♦ 1 new-construction small mooring-buoy tender Mer

Y. . . Telenn Mor (In serv. 1985)

D: . . . S: . . . Dim: . . . × . . . × . . . M: 2 diesels; 2 props; 900 hp

REMARKS: No other data yet available.

♦ 1 Tupa class (In serv. 16-3-74)

V 667 TUPA



Tupa (Y 667)

French Navy, 1983

D: 292 tons light S: 6 kts Dim: 28.5 × 8.3 × 0.85 M: 1 diesel; 1 prop; 210 hp

Remarks: Based at Muraroa. Used as a mooring-buoy tender.

♦ 1 Calmar class (In serv. 12-8-70)

Y 698 CALMAR

D: 270 tons light S: 9.5 kts Dim: . . . × M: 1 Baudoin diesel; 1 prop; . . . hp

Remarks: Based at Lorient. Used as a mooring-buoy tender.

DIVING TENDERS

♦ 1 base tender

Bldr In serv. A 722 Poseidon SIGNAV, St.-Malo 5-12-74 14-1-77

D: 200 tons (220 fl) S: 13 kts Dim: 40.5 (38.5 pp) × 7.2 × 2.2 M: 1 diesel; 600 hp Endurance: 8 days Man: 42 tot.

Remarks: Used for training combat frogmen. Based at Toulon.

DIVING TENDERS (continued)



Poseidon (A 722)

J.-C. Bellonne, 1977

♦ 4 ex-U.S. Adjutant-class former coastal minesweepers

| | Bldr | In serv. |
|---------------------------------------|---------------------|----------|
| A 701 AJONC | F. L. Sample, Maine | 26-2-54 |
| (ex-M 667, ex-MSC 7 | | 00.0 = 1 |
| M 711 GARDENIA (ex-M 676, ex-MSC 1 | Tacoma Boat, Wash. | 30-8-54 |
| A 723 LISERON | Tacoma Boat, Wash. | 1-1-55 |
| (ex-M 683, ex-MSC 9 | | |
| M 770 Magnolia | Stephen Bros. | 30-10-54 |
| (ex-M 685, ex-MSC 8 | 7) | |



Liseron (A 723)

L. & L. Van Ginderen, 6-85

D: 300 tons (372 fl) S: 13 kts Dim: 4.30 (41.5 pp) × 7.95 × 2.55 Electron Equipt: Radar: 1/Decca 1229

M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp Fuel: 40 tons Range: 2,500/10 Man: 3 officers, 9 petty officers, 20 men

Remarks: Ajonc (A 701) is a tender to the French Navy's diving school (PLONGECO) at St. Mandrier; the others support mine-demolition divers. A deckhouse has replaced the minesweeping winch, and the forward superstructure has been enlarged. Wooden construction. To be replaced 1986-88 by four new modified Chamois-class units.

Note: U.K. "Ham"-class diving tender Myosotis (A 710, ex-Riplingham) was stricken 1985.

TORPEDO RECOVERY SHIPS

Note: The net tender Cigale (A 760) is also used as a torpedo retriever, and some of the tenders of the Chamois class can be employed as such.

1 former tuna-fishing boat

A 699 PÉLICAN (ex-Kerfany)

Bldr: Avondale, U.S.A., 1951

D: 362 tons (425 fl) **S:** 11 kts **Dim:** $37.0 \times 8.55 \times 4.0$

M: 1 Burmeister & Wain diesel; 1 prop; 650 hp Man: 5 petty officers, 14 men

Remarks: Purchased 1965. 550-mm torpedo tube at stern.

• 2 small torpedo retrievers for use at the St. Tropez trials center

Pégase Bldr: SFCN (In serv. 1975) — 880-hp catamaran with one 550-mm torpedo tube aft

Sambracite (In serv. 1974)



Pélican (A 699)

G. Gyssels, 6-82

COASTAL TRANSPORTS

| • 9 Ariel class | Bldr: A: SFCN, Franco-Belge; B: DCAN, Brest | | | | | |
|-----------------|---|---------|---------------|------|---------|--|
| | Bldr | L | | Bldr | L | |
| Y 604 ARIEL | A | 27-4-63 | Y 700 Néréide | В | 17-2-77 | |
| Y 613 FAUNE | A | 8-9-71 | Y 701 ONDINE | В | 4-10-79 | |
| Y 622 DRYADE | A | 1973 | Y 702 NAIADE | В | 4-10-79 | |
| Y 661 KORRIGAN | A | 6-3-64 | Y 741 ELFE | A | 14-4-70 | |
| Y 696 Alphée | A | 10-6-69 | | | | |



Ariel (Y 604)

J.-C. Bellonne, 1983

D: 195 tons (225 fl) **S:** 15 kts **Dim:** $40.5 \times 7.45 \times 3.3$ **M:** 2 MGO (1,640 hp) or Poyaud (1,730 hp) diesels; 2 props **Man:** 9 tot., 400 passengers (250 seated)

Remarks: Can carry 400 passengers (250 seated). All based at Brest, except Ariel and Naiade at Toulon.

- ♦ 1 small personnel transport: Treberon (In serv. 26-11-79)—at Brest
- 3 Merlin class (In serv. 6-68)

Bldrs: Y 735 and Y 736: C.N. Franco-Belges; Y 671: A du Mourillon

Y 735 MERLIN Y 736 MÉLUSINE Y 671 MORGANE



Morgane (Y 671)

G. Arra, 1982

D: 170 tons S: 11 kts Dim: $31.5 \times 7.06 \times 2.4$ M: MGO diesels; 2 props; 960 hp Man: 400 passengers

REMARKS: All based at Toulon.

COASTAL TUGS (continued)

♦ 11 Actif group

| | Bldr | D: light/fl | In serv. |
|-------------------|----------------------|-------------|----------|
| A 667 HERCULE | Franco-Belges | 194/240 | 21-3-60 |
| A 671 LE FORT | FCG, Bordeaux | 248/311 | 12-7-71 |
| A 672 UTILE | FCG, Bordeaux | 226/288 | 8-4-71 |
| A 673 LUTTEUR | *:::* *: | 226/288 | 19-7-63 |
| A 685 ROBUSTE | Franco-Belges | 194/239 | 4-4-60 |
| A 686 ACTIF | FCM, Le Havre | 226/288 | 11-7-63 |
| A 687 LABORIEUX | FCM, Le Havre | 226/287 | 14-8-63 |
| A 688 VALEUREUX | Franco-Belges | 196/247 | 17-10-60 |
| A 692 Travailleur | FCM, Le Havre | 226/288 | 11-7-63 |
| A 693 Acharné | La Perrière, Lorient | 218/293 | 5-7-74 |
| A 694 Efficace | La Perrière, Lorient | 230/ | 17-10-74 |
| | | | |



Travailleur (A 692)

J. Pradignac, 3-85

D: See name list **S:** 11.8 kts **Dim:** 28.3 (25.3 pp) \times 7.9 \times 4.3 M: 1 MGO ASHR diesel; 1,100 to 1,450 hp Range: 2,400/1

Remarks: Bollard pull: 17 tons. Similar, but not identical, ships. Courageux (A 706) stricken 1980.

HARBOR TUGS

♦ 20 pusher tugs

Bldr: La Perrière, Lorient (In serv. 1976-1983)

P. 1-P. 20



P. 7-24-ton pusher tug

G. Gyssels, 6-83

D: 24 tons (fl) **S:** 9.2 kts **Dim:** 11.50 (11.25 wl) \times 4.30 \times 1.45 M: 2 Poyaud 520 V8M diesels; 2 props; 440 hp Fuel: 1.7 tons Range: 191/9.1, 560/8 Man: 2 tot.

Remarks: For dockyard use. Primarily for pushing, but have 4.1-ton bollard pull. No names or NATO pendant numbers assigned.

Note: The tugs listed below have two-letter contractions of names on bows instead of official pendant numbers.

 2 Bonite class Bldr: SFCN, Châlon-sur-Seine

Y 634 Rouget (In serv. 1974) Y 630 Bonite (In serv. 1975)

D: 93 tons (fl) S: 11 kts M: 380 hp

Remarks: Bollard-pull capacity: 7 tons.



Bonite (Y 630)

J.-C. Bellonne, 1975

♦ 28 Acajou class (alphabetical listing; pendant numbers not borne)

| Y 601 Acajou | Y 618 ERABLE | Y 638 Marronier | Y 740 PAPAYER |
|------------------|----------------------|------------------|----------------|
| Y 607 Balsa | Y 635 Equeurdreville | Y 668 MÉLÈZE | Y 688 PEUPLIER |
| Y 623 Charme | Y 644 Frêne | Y 669 Merisier | Y 689 Pin |
| Y 620 Chataigner | Y 654 HÊTRE | Y 739 Noyer | Y 695 PLATANE |
| Y 624 Chêne | Y 655 HEVEA | Y 682 OKOUMÉ | Y 720 SANTAL |
| Y 629 Cormier | Y 663 LATANIER | Y 719 OLIVIER | Y 708 SAULE |
| Y 717 ÉBÈNE | Y 666 Manguier | Y 686 Palétuvier | Y 704 Sycomore |



Manguier (Y 666)

D: 105 tons (fl) S: 11 kts Dim: 21.0 × 6.9 × 3.2 M: 1 diesel; 700 hp REMARKS: Bollard-pull capacity: 10 tons. Bouleau (Y 612) stricken 1980.

• 29 Oiseau class (alphabetical listing, pendant numbers not borne)

| V 20 Oiseau cia | ss (aiphabeticai fisting, | pendant numbers not born | ie) |
|-----------------|---------------------------|--------------------------|----------------|
| Y 602 AIGRETTE | Y 723 Engoulevent | Y 725 Marabout | Y 691 Pinson |
| Y 720 Alouette | Y 687 FAUVETTE | Y 675 Martin Pêcheur | Y 694 PIVERT |
| Y 730 Ara | Y 748 GELINOTTE | Y 636 MARTINET | Y 724 SARCELLE |
| Y 611 Bengali | Y 648 GOELAND | Y 670 Merle | Y 726 Toucan |
| Y 625 CIGOGNE | Y 728 Grand Duc | Y 621 Mésange | Y 722 VANNEAU |
| Y 628 Colibri | Y 653 HÉRON | Y 673 Moineau | |
| Y 632 CYGNE | Y 747 LORIOT | Y 617 MOUETTE | |
| Y 729 Eider | Y 727 Macreuse | Y 687 Passereau | |



Bengali (Y 611)

DCAN, 1975

D: 200 tons (fl) **S:** 9 kts **Dim:** $18.4 \times 5.7 \times 2.5$ M: 1 Poyaud diesel; 250 hp Range: 1,700/9

Remarks: Bollard-pull capacity: 3.5 tons. Ibis (Y 658) on loan to Senegal.

TRAINING SHIPS AND CRAFT

Note: In addition to the designated ships and craft below, the French Navy operates a number of other units primarily in training roles. These include the helicopter carrier Jeanne d'Arc (R 97), frigate Doudart de Lagrée (F 728), and the diving tenders Poseidon (A 722) and Ajone (A 701).

8 Léopard class

| | Bldr | Laid down | L | In serv. |
|----------------|-----------------------|-----------|----------|----------|
| A 748 LÉOPARD | de la Manche, StMalo. | 6-4-81 | 4-6-81 | 4-12-82 |
| A 749 Panthère | de la Manche, StMalo | 9-6-81 | 3-9-81 | 4-12-82 |
| A 750 Jaguar | de la Manche, StMalo | 27-9-81 | 29-10-81 | 18-12-82 |
| A 751 Lynx | La Perrière, Lorient | 23-7-81 | 27-2-82 | 18-12-82 |
| A 752 Guépard | de la Manche, StMalo | 11-10-82 | 1-12-82 | 1-7-83 |
| A 753 CHACAL | de la Manche, StMalo | 11-10-82 | 11-2-83 | 10-9-83 |
| A 754 Tigre | La Perrière, Lorient | 16-4-82 | 8-10-82 | 1-7-83 |
| A 755 Lion | La Perrière, Lorient | 21-2-82 | 13-12-82 | 10-9-83 |

COASTAL TRANSPORTS (continued)

♦ 1 Sylphe class

Bldr: C.N. Franco-Belges (In serv. 1960)

Y 710 SYLPHE



Sylphe (Y 710)

1976

D: 142 tons (189 ft) S: 12 kts Dim: 38.5 (36.75 pp) × 6.9 × 2.5 M: 1 MGO diesel; 1 prop; 425 hp Man: 9 tot.

Remarks: Has operated from Brest since 1981.

SALVAGE AND RESCUE TUGS

Note: The French government leased four powerful salvage tugs as a result of the *Amoco Cadiz* disaster; the fourth, *Abeille Normandie* has been returned to its owners. All are owned by the PROGEMAR consortium.

• 2 Abeille Flandre class

Bldr: Ulstein Hatlo A/S, Ulsteinvick, Norway

ABEILLE FLANDRE (In serv. 1978) (ex-Neptun Suecia)

ABEILLE LANDUEDOC (In serv. 1978)



Abeille Flandre

L. & L. Van Ginderen, 12-81

D: . . . S: 17 kts Dim: 63.40 (58.60 pp) × 14.74 × 6.90 Fuel: 1,450 tons M: 4/8-cyl. Atlas diesels; 2 CP props; 23,000 hp Electric: 1,280 kw

Remarks: 1,577 grt. A. Flandre at Brest, A. Languedoc at Cherbourg. Ice-strengthened; have bow-thrusters.

◆ 1 Abeille Normandie class

Bldr: Beliard-Murdoch, Ostend

ABEILLE PROVENCE (In serv. 1978)



Abeille Provence

G. Gyssels, 1980

D: . . . **S:** 16 kts **Dim:** $66.76 (61.02 \text{ pp}) \times 13.01 \times 5.70$ **M:** 2/20-cyl. SACM diesels; 2 CP props; 16,000 hp **Electric:** 1,600 kw **Fuel:** 1,079 tons

Remarks: 1,401 grt. Ice-strengthened, equipped for salvage and firefighting. 120-ton bollard pull. Two 550-hp bow-thrusters. Based at Toulon.

SEAGOING TUGS

3 Tenace class

| | Bldr | L | In serv. |
|----------------|------------------------|---------|----------|
| A 664 Malabar | Oelkers, Hamburg | 16-4-75 | 3-2-76 |
| A 669 Tenace | Oelkers, Hamburg | 12-71 | 15-11-73 |
| A 674 CENTAURE | de la Rochelle-Pallice | 8-1-74 | 15-11-74 |



Malabar (A 664)

M. Louagie, 6-85

D: 970 tons (1,440 fl)
 S: 13.5 kts
 Dim: 51.0 × 11.5 × 5.7
 M: 2 diesels; 1 prop; 4,600 hp
 Fuel: 500 tons
 Range: 9,500/13
 Man: 4 officers, 30 petty officers, 24 men

Remarks: Bollard-pull capacity; 60 tons. Living quarters air-conditioned. All based at Brest. A 664 employed as fisheries protection ship 15-9-80 to 6-11-80.

Note: Ex-U.S. Navy seagoing tug *Hippopotame* (A 660, ex-*Utrecht*, ex-ATR 47) stricken early 1986.

COASTAL TUGS

• 0 (+14 . . .) new construction

Bldr: C.N. LaManche, Dieppe

A. . . N. . . (In serv. . . .)

D: . . . S: 12.75 kts Dim: 29.55 × 9.00 × 3.7 M: 1 SACM AGO 195 V12 RVR diesel; 1 prop; 2,000 hp

Remarks: Ordered 10-84. Program not confirmed; data provisional.

♦ 3 Belier class Bldr: Cherbourg Arsenal

L In serv.
A 695 Belier 4-12-79 25-7-80
A 696 Buffle 18-1-80 19-7-80
A 697 Bison 20-11-80 16-4-81



Bison (A 697)

G. Gyssels, 1981

D: 500 tons (800 fl) **S:** 11 kts **Dim:** $32.0 \times 8.8 \times$. .

M: 2 SACM AGO 195 V8 CSHR diesels, electric drive; 2 Voith-Schneider vertical cycloidal props; 2,600 hp

Man: 1 officer, 7 petty officers, 4 men

Remarks: Based at Toulon. Bollard pull: 25 tons. Have two firefighting monitors atop bridge.

TRAINING SHIPS AND CRAFT (continued)



Chacal (A 753)

Pradignac & Leo, 4-84

D: 463 tons (fl) S: 15 kts Dim: 43.00 (40.15 pp) \times 8.30 \times 3.21 A: 2/20-mm AA (I \times 2) Electron Equipt: Radar: 1/Decca . . . M: 2 SACM 75 V16 ASHR diesels; 2 props; 2,200 hp Range: 4,100/12 Man: 1 officer, 13 men, plus 17 trainees and 4 instructors

Remarks: First four authorized 1980, second group 1981. Replaced the minesweepers of the U.S. Adjutant class in training duties. Also for patrol use if required.

♦ 2 ex-trawlers

A 772 Engageante (ex-Cayolle) A 773 Vigilante (ex-Iseran)



Vigilante (A 773)

L. & L. Van Ginderen, 11-82

D: 286 tons fl (156 grt) S: 11 kts Dim: 30.0 (25.0 pp) × 6.7 × 3.8 (aft) Electron Equipt: Radar: 1/Decca . . . M: 1 Deutz diesel; 1 prop; 560 hp REMARKS: Built 1964; purchased 1975. Used by petty officers' navigation school.

♦ 2 tenders Bldr: Bayonne (In serv. 1971)

Y 706 CHIMÈRE Y 711 FARFADET



Farfadet (Y 711)

Pradignac & Leo, 1983

D: 100 tons S: 11 kts M: 1 diesel; 200 hp

Remarks: Used by the Naval Academy for training in maneuvering.

♦ 2 British "Ham"-class former inshore minesweepers

A 735 Hibiscus (ex-Sparham, ex-MSI 85) In serv.
A 736 Dahlia (ex-Whippinham, ex-MSI 88) 9-55



Hibiscus (A 735)

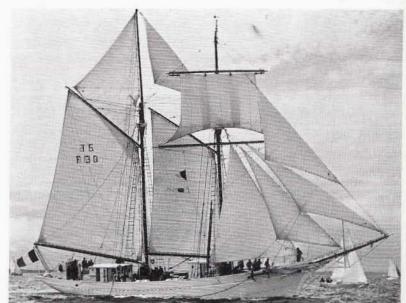
L. & L. Van Ginderen, 3-85

D: 140 tons (170 fl) S: 14 kts Dim: 32.43 × 6.45 × 1.70 A: 1/20-mm AA Electron Equipt: Radar: 1/Decca 1229 M: 2 Paxham YHAXM diesels; 2 props; 550 hp Endurance: 4 days Fuel: 15 tons Range: 2,350/9 Man: 2 officers, 10 men

Remarks: Wooden-hulled. Built in Great Britain with U.S. Offshore Procurement funds. Used as general-purpose tenders and training craft at Cherbourg. Sisters Tulipe (A 737, ex-Frettenham, ex-MSI 75), Capucine (A 738, ex-Petersham, ex-MSI 78), Oeillet (ex-Isham, ex-MSI 79) and Hortensia (ex-Mileham, ex-MSI 76) stricken 1985; other pair to strike 1986.

◆'2 auxiliary barkentines Bldr: Chantiers de Normandie, Fécamp (In serv. 1932)

A 649 L'ÉTOILE A 650 LA BELLE POULE



La Belle Poule (A 650)

1974

D: 225 tons (275 fl)
 S: 6 kts
 Dim: 32.25 × 7.0 × 3.2
 M: Sulzer diesel; 125 hp

Remarks: Assigned to the Naval Academy.

• 1 sail-training yawl (L: 1932)

A 653 La Grande Hermine (ex-La Route Est Belle, ex-Menestrel)

Remarks: Fourteen-meter yawl purchased in 1964 for the reserve officers' school. D: 7 tons (13 fl).

♦ 1 sail-training craft Bldr: C.N. de Vendée (l: 1927)

A 652 MUTIN

D: 40 tons (55 fl) **S:** . . . **Dim:** 33.0 (22.0 hull) \times 6.5 \times 3.2 (1.5 fwd) **M:** 1 Baudouin 6-cyl. diesel; 1 prop; 112 hp

Remarks: Assigned to the annex of the Seamanship School. 240m3 sail area.

MISCELLANEOUS SERVICE CRAFT

♦ 2 weapons range safety patrol boats Bldrs: C.N. de L'Estérel

A 712 ATHOS 20-11-79 22-11-79 A 713 ARAMIS 9-9-80 22-9-80

MISCELLANEOUS SERVICE CRAFT (continued)



Athos (A 712)

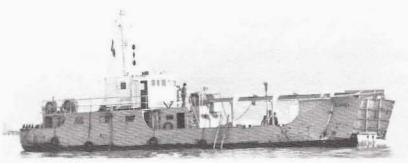
L. & L. Van Gindere, 9-83

D: 80 tons (99.5 fl) S: 28 kts Dim: $32.1 \times 6.5 \times 1.9$ A: 1/20-mm AA Electron Equipt: Radar: 1/Decca . . . M: 2 SACM diesels; 2 props; 4,640 hp Range: 1,500/15 Man: 1 officer, 6 petty officers, 10-11 men (including 6 divers)

Remarks: Operate at the Landes Test Center, both as range-safety craft and for weapons-recovery duties. Wooden hulls.

♦ 1 trials support tender

DCAN 164 MÉROU



Mérou - with bow doors open

G. Gyssels, 7-82

Remarks: A diving tender with bow-door arrangement. Based at Toulon and civilianoperated.

♦ 1 range safety patrol craft

A 702 GIRELLE



Girelle (A 702)

E.C.P.A., 1976

D: . . . S: . . . M: . . .

Remarks: Wooden construction. Operates from St. Raphaël.

• 1 range safety patrol boat

Bldr: C.N. de L'Esterel (in serv. 14-2-74)

A 714 TOURMALINE



Tourmaline (A 714)

1974

D: 37 tons (45 fl) **S:** 15 kts **Dim:** $26.8 \times 4.97 \times 1.53$ **M:** 2 diesels; 2 props; 480 hp

Remarks: Wooden construction. Can carry 1/20-mm AA.

• 6 fireboats

Y 745 AIGUIÈRE Y 618 CASCADE Y 746 EMBRUN Y 645 GAVE Y 646 GEYSER Y 684 OUED



Aiguière (A 745) - red-painted, no pendant number L. & L. Van Ginderen, 4-82

D: 70 tons (85 fl) S: 11.3 kts Dim: $23.8 \times 5.3 \times 1.7$ M: 2 Poyaud 6 PZM diesels; 2 props; 405 hp

♦ 1 degaussing (deperming) tender

Y 732



Y 732

DCAN, 1970

D: 260 tons **S:** 10 kts **Dim:** 38.2 × 4.3 × 2.4 **M:** 1 diesel; 1 prop; 375 hp **Man:** 5 tot.

• 1 radiological monitoring ship (In serv. 1969)

Y 743 PALANGRIN

D: 44 tons S: 9 kts M: 1/220-hp diesel



Palangrin (Y 743)

Pradignac & Leo, 1984

♦ 18 motor lighters, converted from LCM (3)-class landing craft

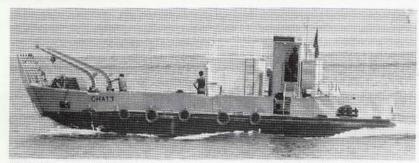
CHA 1, 2, 6, 7, 8, 9, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26

D: 20 tons (50 fl) **S:** 7 kts **Dim:** $15.2 \times 4.4 \times 1.6$ **M:** 1 diesel; 100 hp (CHA 1, CHA 6: 115 hp)

• 18 water lighters

1 to 18

FRANCE (continued) MISCELLANEOUS SERVICE CRAFT (continued)



CHA 13

L. & L. Van Ginderen, 8-84

D: . . . S: 9 kts Dim: . . . × M: 1 diesel; 430 hp

REMARKS: Nos. 5 and 6 in Tahiti, No. 2 at Brest, Nos. 1 and 11 at Toulon, No. 12 at Lorient, others at the CEP (Centre d'Expérimentation Pacifique).

4 water lighters for SSBNs

1 2 3 4

D: 44 tons light S: 6 kts Dim: . . . × M: 1 diesel; 496 hp Remarks: Two at Brest, two at Cherbourg.

Gabonese Republic

Personnel (1984): approx. 300

Merchant Marine (1982): 20 ships - 97,267 grt (tankers: 2 ships - 74,471 grt)

NAVAL AVIATION: One Embraer EMB 111 Bandeirante maritime patrol aircraft is operated by the Air Force.

PATROL BOATS AND CRAFT

♦ 0 (+2) French "Super PATRA" class Bldr: CMN, Cherbourg N. . . N. . .

D: 371.5 tons light (422.5 fl) S: 24 kts

Dim: 54.50 (50.0 pp) × 8.0 (7.7 wl) × 2.54 (2.08 hull)

A: One unit: 1/57-mm Bofors SAK 57 Mk 2-1/20-mm Oerlikon AA; other: 2/20-mm Oerlikon AA (I \times 2)

Electron Equipt: 1/Decca-Racal 1226

M: 2 SEMT-Pielstick 16PA4V200 VGDS diesels; 2 CP props; 8,000 hp

Electric: 360 kw Fuel: 73 tons Range: 4,000/15

Endurance: 15 days Man: 3 officers, 22 men + 23 passengers

Remarks: Reported ordered 11-84. Limiting displacement 446 tons. Carries 840 rds 40-mm, 2,100 rds 20-mm ammunition. Can carry two MM 40 Exocet SSM. For search-and-rescue use, carries inflatable launch and can accommodate 23 rescued personnel. Have two contraband storerooms. Engines to be built by Uni-Diesel.

Bldr: de l'Estérel, Cannes (In serv. 12-1-78) ♦ 1 wooden-hulled

GC 05 GENERAL NAZAIRE BOULINGUI KOUNBA (ex-President el Haj Omar Bongo)



General Nazaire Boulingui Kounba

d l'Estérel, 1977

D: 100 tons (fl) S: 32 kts Dim: 42.0 × 7.8 × 1.9

A: 4/SS-12M SSM (II × 2) — 1/40-mm Bofors AA — 1/20-mm AA

Electron Equipt: Radar: Decca RM 1226

M: 3 SACM AGO 195 12CSNR diesels; 3 props; 5,400 hp Fuel: 28.4 tons Range: 1,000/18 Man: 3 officers, 20 men Remarks: Wire-guided, optically aimed anti-ship missiles. Reported re-engined at Port-Gentil, completing early 1985; the original 3 MTU 16V538 TB91 diesels produced 40 kts on 10,500 hp.

♦ 2 N'Golo class Bldr: Intermarine, Sarzana, Italy

GC 04 N'Golo (In serv. 1981)



N'Golo (GC 04) - the first; the second is identical

Intermarine, 1978

D: 65 tons (88 fl) **S:** 43 kts **Dim:** 27.3 × 6.8 × 2.1

A: 1/40-mm AA — 2/20-mm AA Electron Equipt: Radar: 1/Decca RM 916 M: 2 MTU diesels; 2 props; 7,000 hp Man: 13 tot.

Remarks: Replaces the original N'Golo, which was destroyed by fire 13-3-80. This design uses the largest glass-reinforced plastic hull of any high-speed craft in the

 1 U.S. aluminum-hulled design 2-76)

Bldr: Swiftships, Morgan City, La. (In serv.

GC 03 N'GUENE

D: 118 tons (fl) S: 27 kts Dim: 32.17 (29.18 pp) × 2.3 (props) A: 2/40-mm AA $(I \times 2) - 2/20$ -mm AA $(I \times 2) - 2/12.7$ -mm mg $(I \times 2)$ Electron Equipt: Radar: Decca RM 916 Range: 825/25 Man: 21 tot. M: 3 G.M. 16V149 TE diesels; 3 props; 4,800 hp Electric: 80 kw

♦ 1 32-m wooden-hulled Bldr: de l'Estérel, Cannes (In serv. 3-72) GC 02 COLONEL DJOUÉ DABANY (ex-President Albert Bernard Bongo)

Colonel Djoué Dabany (GC 02)

de l'Estérel, 1972

D: 80 tons S: 30 kts Dim: 32.0 × 5.8 × 1.5 A: 2/20-mm AA (I × 2) M: 2 MTU diesels; 2,700 hp Man: 17 tot.

 1 Gabonese design Bldr: Libreville DY, Gabon (In serv. 16-1-68)

GC 01 President Léon M'Ba

D: 85 tons S: 12.5 kts Dim: 28.0 × 6.2 × 1.54

A: 1/75-mm recoilless rifle — 1/12.7-mm mg Man: 1 officer, 15 men

M: 2 Baudoin diesels; 2 props; 540 hp Range: 1,000/12

AMPHIBIOUS WARFARE SHIPS AND CRAFT

1 French Champlain-class landing ship Bldr: Atelier Français de l'Ouest, Grand Quevilly, Rouen, France

Laid down In serv. LO 5 PRESIDENT EL HADJ OMAR BONGO 7-3-83 24-10-84 16-4-84

D: 770 tons (1,336 fl) **S**: 16 kts **Dim**: $80.0 \times 13.0 \times 2.40$

A: 2/40-mm AA (I × 2) — 1/81-mm mortar — 2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/DRBN-32 (Decca 1226) M: 2 SACM 195V12 diesels; 2 CP props; 3,600 hp

Range: 4,500/13 Man: 47

REMARKS: Purchase announced 28-2-84. Capacity: 340 tons stores, plus 138 troops and 7 combat vehicles. Helicopter platform aft. Carries one LCVP and one personnel landing craft.

♦ 1 transport Bldr: DCAN, Dakar (In serv. 11-5-76)

GC. . . MANGA

D: 152 tons S: 9 kts Dim: 24.0 × 6.4 × 1.3 A: 2/12.7-mm mg

GABON (continued)

AMPHIBIOUS WARFARE SHIPS AND CRAFTS (continued)

Electron Equipt: Radar: Decca 101

M: 2 Poyaud V8-520 diesels; 2 props; 480 hp Man: 10 tot.

REMARKS: Landing craft design, equipped with bow ramp.

Bldr: Tanguy Marine, Le Havre (In serv. 1985) • 2 harbor launches

D: 2.5 tons (7.5 fl) **S**: . . . **Dim**: $12.00 \times 2.95 \times 0.30$ M: 2 Volvo Penta AQAD-40B diesel outdrives; 165 hp

Remarks: One unit is only 10.00 m o.a., 2.25 tons (6.25 fl). Ordered 10-84.

COAST GUARD

♦ 2 harbor patrol craft Bldr: La Manche, Dieppe (In serv. 24-11-77)

NDJOLE OMBOUÉ

D: 18 tons (fl) S: 10 kts Dim: 12.4 × 3.7 × 0.9 M: 1 diesel; 1 prop; 170 hp

- ♦ 1 Arcoa 960 launch—S: 25 kts
- ♦ 6 Arcoa launches S: 15 kts
- Bldr: La Manche, Dieppe (In serv. 24-11-77) 1 buoy tender

D: 60 tons (fl) S: 10 kts Dim: 17.0 × 4.5 × 1.3 M: 1 Baudoin DNP-6 diesel; 1 prop; 215 hp

THE GAMBIA

Note: The "unification" of the Gambia with Senegal on 1-2-82 was supposed to have unified the armed forces of both countries, but this has not yet occurred to any appreciable extent.

Merchant Marine (1984): 7 ships - 3,290 grt

PATROL CRAFT

♦ 3 Tracker Mk-2 class Bldr: Fairey Marine, U.K. (In serv. 1977-78)

P 2 JATO P 3 CHALLENGE P 4 CHAMPION

D: 31.5 tons (fl) S: 29 kts Dim: 19.25 × 4.98 × 1.45

A: 1/20-mm AA - 2/7.62-mm mg

M: 2 G.M. 12V-71 TI diesels; 2 props; 1,290 hp

Range: 650/20 Man: 11 tot.

♦ 1 Lance class Bldr: Fairey Marine, U.K. (In serv. 28-10-76)

P 1 SEA DOG

D: 17 tons (fl) **S:** 24 kts **Dim:** $14.81 \times 4.76 \times 1.3$

A: 1/20-mm AA — 3/7.62-mm mg (I × 3)
M: 2 G.M. 8V-71 TI diesels; 2 props; 850 hp Range: 500/15

Man: 6 crew plus 10-man boarding party

♦ 1 Keith Nelson 75-foot class Bldr: Camper & Nicholson, U.K. (In serv. 1974)

MANSA KILA IV

D: 70 tons (fl) **S:** 24.5 kts **Dim:** $22.9 \times 6.0 \times 1.6$ **A:** 2/20-mm AA (I \times 2)

M: 2 diesels; 2 props; 1,840 hp Range: 800/20 Man: 11 men

ERMANY

German Democratic Republic

Personnel: 14,600 total, including approx. 3,000 Frontier Guards personnel and 400 in naval aviation.

Merchant Marine (1984): 409 ships - 1,421,714 grt (tankers: 13 ships - 73,994 grt)

NAVAL AVIATION: Helicopters in naval service included 8 Mi-14 Haze-A for land-based ASW, and 13 Mi-8 Hip-F and 7 Mi-8 Hip-C transport helicopters.

Weapons and Systems: Nearly all of Soviet design. See U.S.S.R. section for details.

Warships In Service Or Under Construction As Of 1 January 1986

| | | 0+4 | |
|----------------------|------------|--------------|---|
| | L | Std. Tons | Main armament |
| ♦ 2 frigates | | | |
| 2 Koni | 1977-78 | 1,500 | 1/SA-N-4, 4/76.2-mm, 4/30-mm, 2 ASW RL |
| ♦ 17 corvettes | | | |
| 17 Parchim | 1980-82 | 960 | 2/57-mm AA, 4 ASW TT, 2 ASW RL |
| • 64 missile and tor | pedo boats | ı | |
| 2(+) TARANTUL I | 1984 | 480 | 4 Styx, 1/76-mm AA |
| 15 Osa-I | 1964- | 175 | 4 Styx, 4/30-mm AA |
| 17 Shershen | 1966- | 150 | 4/30-мм АА, 4/533-мм ТТ |
| 30 LIBELLE | 1975-79 | 20 | 2/533-mm TT |
| ♦ 45 minesweepers | | | |
| 45 Kondor I, II | 1968-79 | 22/310 | 2 or 6/25-mm AA |
| | | | |

12 landing ships

Note: Ships and craft in auxiliary status have pendant numbers beginning with a letter denoting the general function:

A: Salvage ships and tugs B: Torpedo retrievers C: Liquid cargo carriers

G: Coastal Border Brigade (GBK— Grenzbrigade Küste) units H: Miscellaneous units K: Diving tenders

D: Ships and craft of the SHD E: Dry cargo carriers F: Fireboats (Feurluschboot)

S: Training units (Schulschiff) U: Air/Sea rescue units

V: Experimental units (Versuch)

Navigational service and hydrographic survey units are operated by the civilian-

manned Naval Hydrographic Service (SHD-Seehydrographischen Dienst): The ships wear "SHD" on a band on their stacks and do not carry pendant numbers; they do display their names.

FRIGATES

♦ 2 Soviet Koni class Bldr: Zelenodolsk SY

141 Rostock (In serv. 25-7-78) 142 Berlin (In serv. 10-5-79)



Rostock (141)

M.O.D., Bonn, 5-83



Berlin (142)

M.O.D., Bonn, 5-84

D: 1,500 tons (1,900 fl) S: 27 kts Dim: 95.0 × 12.8 × 4.2 (hull) A: 1/SA-N-4 SAM system (II × 1, 20 missiles) -4/76.2-mm DP (II × 2) -4/30-mm AA (II \times 2) – 2/RBU-6000 ASW RL (XII \times 2) – 2/d.c. racks (24 d.c.) — 20 mines

Electron Equipt: Radar: 1/TSR-333, 1/Strut Curve, 1/Pop Group, 1/Hawk Screech, 1/Drum Tilt

Sonar: med.-freq., hull-mounted IFF: 2/Square Head, 1/High Pole-A EW: 2/Watch Dog

M: CODAG: 1 15,000-hp gas turbine; 2 diesels; 3 props; 30,000 hp Range: 1,800/14 Man: 130 tot.

REMARKS: TSR-333 substituted for Don-2. No chaff RL, unlike units delivered more recently. Depth-charge racks bolt to mine rails.

CORVETTES

| 17 Parchim class | Bldr: Peenewerft, V | Volgast (In serv. 1981-85 |
|--------------------------------------|---------------------|---------------------------|
| In | serv. | In serv. |
| 7.00 | | |

| | In serv. | | In serv. |
|-----------------|----------|-----------------------|----------|
| 241 Lübz | 9-4-81 | 232 RIBNITZ-DAMGARTEN | 1982* |
| 242 PARCHIM | 3-9-81 | 233 Teterow | 1984* |
| 243 Bützow | 1981 | 234 N | 1984 |
| 244 BAD DOBERAN | 1981 | 235 N | 1984 |
| 221 Perleberg | 1981 | 211 N | 1984 |
| 222 WISMAR | 1982 | 212 N | 1985 |
| 223 Waren | 1982 | 213 Gädebusch | 6-85* |
| 224 Güstrow | 1982* | 214 Bergen | 7-85* |
| 231 Ludwigslust | 1982* | | |

^{*} Name/number correlation tentative



Lübz (241)

M.O.D., Bonn, 7-81



Ribnitz-Damgarten (232)

M.O.D., Bonn, 7-84



Teterow (233)

M.O.D., Bonn, 3-84

D: 960 tons (1,200 fl) S: 25 kts Dim: 72.5 × 9.4 × 3.5 (max.)

A: 2/57-mm AA (II \times 1) — 2/30-mm AA (II \times 1) — 2/SA-N-5 SAM systems (IV \times 2) — 4/400-mm ASW TT (I \times 4) — 2/RBU-6000 ASW RL (XII \times 2) — 2/d.c. racks - mines

Electron Equipt: Radar: 1/TSR-333, 1/Strut Curve, 1/Muff Cob Sonar: MF hull-mounted; high-freq. dipping sonar IFF: 1/High Pole-B

EW: 2/Watch Dog, 2/chaff RL (XVI × 2)

M: 2 diesels; 2 props; 12,000 hp Man: 60 tot.

Remarks: Two began trials 1980, 4 in 1981, 2 in 1982, 4 in 1983. Intended to replace the Hai-III class. Previously referred to by NATO as the "Bal-Com-4" and by the press as the "Koralle" class. Helicopter dipping sonar deploys through door on starboard side of main deck superstructure. D.C. racks exit through doors in stern.

Note: The last four of 12 Hai-III-class corvettes, Gadebusch, Grevesmühlen, Pirna, and Ribnitz-Damgarten, were stricken 1984-85.

GUIDED-MISSILE CORVETTES

Bldr: Petrovskiy SY, Leningrad * 2 (+ . . .) Soviet Tarantul-I class

... N. . . (In serv. 2-85) 813 Albin Köbis (In serv. 9-84)

D: 480 tons (540 fl) S: 35 kts

Dim: 56.60 (52.50 pp) × 10.50 max. (9.4 wl) × 2.50

A: 4/SS-N-2C Styx SSM (II × 2) — 1/76.2-mm DP — 1/SA-N-5 SAM syst. (IV × 2; . . . SA-7 Grail missiles) -2/30-mm, 6-barreled gatling AA (I × 2) Electron Equipt: Radar: 1/Krivach (or TSR-333) nav., 1/Plank Shave missile targetting, 1/Bass Tilt gun f.c.

EW: 4/intercept antenna, 2 decoy RL (XVI×2) IFF: 1/Square Head, 1/High Pole-B

M: CODOG/COGOG: 2 probable NK-12MV gas turbines (12,000 hp each), 1 or 2 diesel or gas turbine cruise engines (approx. 2-3,000 hp each); probable 2 props Range: . . . Man: 50 tot.

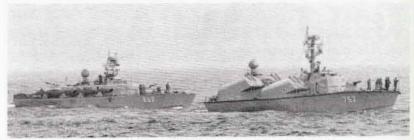
Remarks: Export version of Tarantul design, with simplified electronics. May be intended to replace the aged Osa-Is. The main propulsion gas turbines exhaust through the transom stern, adding their residual thrust to the power. The cruise engine(s) exhaust through a small stack. The SA-N-5 launcher is on the stern, flanked by the two decoy rocket launchers.

GUIDED-MISSILE PATROL BOATS

♦ 15 Soviet Osa-I-class missile boats

Bldr: U.S.S.R.

734 Paul Eisenschneider 711 ALBERT GAST 712 FRIEDRICH SCHULZE 735 Отто Тоѕт 751 Paul Wiekzorek 713 N. 752 RUDOLF EGELHOFER 714 Max Reichpietsch 753 RICHARD SORGE 715 Heinrich Dorrenbach 731 WALTER KRÄMER 754 FRITZ GAST 732 KARL MESEBERG 755 Joseph Schares



Shershen-class Joseph Roemer (852) to stern of Osa-I Rudolf Egelhofer (752)

M.O.D., Bonn

D: 185 tons (215 fl) **S:** 35 kts **Dim:** 38.6 × 7.6 × 1.8

A: 4/Styx (SS-N-2) -4/30-mm AA (II \times 2)

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole-A

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Transferred 1966. Until 1981-82, boats 711-714 bore "S"-series training squadron pendants. Nearing end of useful lives.

TORPEDO BOATS

733 August Lüttgens

18 Soviet Shershen-class torpedo boats

811 Max Hoop 832 ERICH KUTTNER 833 ARTUR BECKER 812 Willi Bäntsch 834 Fritz Heckert

813 ARVID HARNACK 814 Bernard Bästlein 835 Ernst Schneller

851 Edgar André 815 FRITZ BEHN 831 WILHELM FLORIN 852 Joseph Roemer Bldr: U.S.S.R.

853 Heinz Biemler 854 HEINZ KAPELLE 855 Adam Kuckhoff S 816 RUDOLF BREITSCHEID S 836 Bruno Kühn

S 856 ERNST GRUBE



Erich Kuttner (832)

M.O.D., Bonn, 1980

D: 150 tons (170 fl) S: 45 kts Dim: 34.7 × 6.7 × 1.5 A: 4/Styx (SS-N-2) — 4/30-mm AA (II × 2)

TORPEDO BOATS (continued)

Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole-A

M: 3 M503A diesels; 3 props; 12,000 hp Range: 460/42; 850/30

REMARKS: Transferred 1968-76. No d.c. racks, unlike Soviet Navy units. Nearing end of useful lives.

Bldr: East Germany (In serv. 1975-78) ♦ 30 Libelle-class light torpedo boats

911-915, 921-925, 931-935, 941-945, 951-955, 991-995



Libelle class No. 995

M.O.D., Bonn, 1975



Libelle class No. 993

M.O.D., Bonn, 1976

D: 30 tons (fl) S: 50 kts Dim: $19.6\times4.5\times2.0$ A: 2/533-mm TT -2/23-mm AA (II \times 1) Electron Equipt: Radar: 1/TSR-333

M: 3 M50F-4 diesels; 3 props; 3,600 hp Man: 10 tot.

Remarks: Can quickly convert to commando/frogman carriers. Torpedoes discharged over stern; short tubes on deck eject buoys containing wire payout canisters for torpedo guidance. Names reported: Fritz Globig, Karl Baier. One additional unit is used as a trials craft (V87).

PATROL CRAFT

♦ 10 Bremse class

G 30 to G 39



Bremse class No. G 39

1978

D: 25 tons S: 14 kts Dim: 23.0 × 5.0 × 1.1 A: Small arms M: 2 diesels; 2 props; 600 hp Electron Equipt: Radar: 1/TSR-333

Remarks: Built early 1970s. Operated by the Border Guard on rivers and inland waterways. The Border Guard also has a number of smaller craft.

MINE WARFARE SHIPS

♦ 27 Kondor-II-class patrol minesweepers

Bldr: Peenewerft, Wolgast (In

| 324 Röbel | 341 EILENSBURG |
|-----------------|---|
| 325 RATHENOW | 342 BOLTENHAGEN |
| 326 NEURUPPIN | 343 Bernau |
| 331 Klütz | 344 Meiningen |
| 332 Torgau | 345 Riesa |
| 333 Tangerhütte | 346 Strassburg |
| 334 Poessnick | 351 |
| 335 Altenburg | 352 |
| 336 Freiberg | 353 |
| | 325 RATHENOW 326 NEURUPPIN 331 KLÜTZ 332 TORGAU 333 TANGERHÜTTE 334 POESSNICK 335 ALTENBURG |



Rathenow (325)

L. & L. Van Ginderen, 1984



Zerbst (313)

M.O.D., Bonn, 6-84

D: 260 tons (310 fl) S: 17 kts Dim: 55.0 × 7.0 × 2.4

A: 6/25-mm AA (II × 3) - mines Electron Equipt: Radar: 1/TSR-333

M: 2 Type 40D diesels; 2 CP props; 5,000 hp Man: 40 tot.

Remarks: Typed "High Seas Minesweepers" by the East German Navy. Those units with a deckhouse aft (including 313-315, 321, 325, and 332) carry within them the cable reel/winch for the Type 1-Ss/e "Fernräumgerat" (a magnetic minesweeping array) added since 1982. All may carry a small sonar. Three, with "S" pendants, served as training ships. Three additional units are trials craft.

♦ 18 Kondor-I-class inshore minesweepers, used as patrol boats Bldr: Peenewerft, Wolgast (In serv. 1968-70)

| The state of the s | The same of the sa | |
|--|--|-------------------|
| G 411 STENDAL | G 421 AHRENSKOOP | G 441 ANKLAM |
| G 412 Bergen | G 422 ZWICKAU | G 442 UECKERMÜNDE |
| G 413 GREIFSWALD | G 423 Prerow | G 443 Rerik |
| G 414 Pasewalk | G 424 Graal-Müritz | G 444 Weisswasser |
| G 415 PRENZLAU | G 425 Zingst | G 445 Neustrelitz |
| G 416 Meissen | G 426 WITTE | G 446 DEMMIN |



Neustrelitz (G 445)

M.O.D., Bonn, 6-84

MINE WARFARE SHIPS (continued)

D: 225 tons (275 fl) S: 17 kts Dim: 52.0 × 7.0 × 2.4

A: 2/25-mm AA (II × 1) - mines Electron Equipt: Radar: 1/TSR-333

M: 2 Type 40D diesels; 2 CP props; 5,000 hp Man: 30 tot.

Remarks: Typed "Coastal Minesweeper" by East Germany. Attached to Border Guard as patrol boats, but retain minesweeping gear. Three served as training units, with "S" numbers until early 1980s: 814–816. Two have been converted as torpedo-recovery craft; two others, Komet and Meteor, altered as intelligence collectors; another is the state yacht Ostseeland; V 85 is a trials craft; Ernst Thaelmann was converted to a youth-training ship in 1977.

AMPHIBIOUS SHIPS AND CRAFT

♦ 12 Frosch-class landing ships

Bldr: Peenewerft, Wolgast (In serv. 1976-79)

611 EBERSWALDE-FINOW 612 HOYERSWERDA 615 EISENHÜTTENSTADT 616 GRIMMEN 633 HETTSTEDT 634 COTTBUS 635 ANKLAM

613 Lübben 614 Neubrandenburg 631 Schwerin 632 Frankfurt/Oder

636 SCHWEDT



Eisenhüttenstadt (615) — with two 40-tubed, 122-mm artillery RL

1980



Hoyerswerda (612) - note mine rails aft

L. & L. Van Ginderen, 10-83

D: 1,900 tons (fl) S: 16 kts Dim: 98.0 × 12.5 × 2.8

A: 4/57-mm AA (II \times 2) — 4/30-mm (II \times 2) — 2/122-mm artillery RL (XL \times 2) — mines

Electron Equipt: Radar: 1/Strut Curve, 1/Muff Cob, 1/TSR-333—IFF: 1/High Pole-B

M: 2 Type 40D diesels; 2 props; 5,000 hp

Remarks: Cargo capacity 400 to 600 tons or 11 tanks and a company of troops. Similar in general form to Soviet Ropucha class, but smaller and with a blunter bow, heavier armament, etc. Two 40-tubed rocket launchers of the type carried by the Soviet ship *Ivan Rogov* are mounted forward of the bridge. Two additional units have been completed as Frosch-II-class supply ships—see under Auxiliaries.

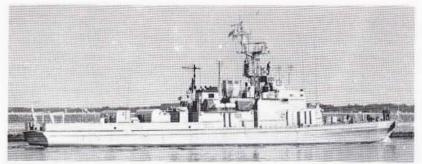
INTELLIGENCE COLLECTION SHIPS

♦ 2 modified Kondor-I class

Komet

Bldr: Peenewerft, Wolgast (In serv. 1968-70)

Komet (ex-. . .) Meteor (ex-. . .)



L. & L. Van Ginderen, 4-81

Remarks: No armament. Collection antennas added; data otherwise as for Kondor-Iclass minesweepers.

1 Okean-class trawler (In serv. 1958)

HYDROGRAPH



Hydrograph

1976

D: 1,050 tons (fl) S: 11 kts Dim: 54.2 × 9.3 × 3.6

Electron Equipt: Radar: 1/TSR-333

M: 18NVD48 diesel; 1 prop; 800 hp Range: 9,400/11 Man: 32 tot.

Remarks: Former trawler equipped with signal collection devices.

Note: Darss-class D 41, Jasmund, is probably an intelligence ship also.

HYDROGRAPHIC SURVEY SHIPS

Note: All survey ships and buoy tenders are operated under SHD, the Naval Hydrographic Service, and are civilian-manned. The ships display their names and do not carry pendant numbers.

♦ 1 Soviet Finik class

Bldr: Polnocny SY, Gdansk, Poland (In serv. 12-80)

DORNBUSCH

D: 1,200 tons (fl) S: 13 kts Dim: 61.30 × 11.80 (10.80 wl) × 3.27

Electron Equipt: Radar: 2/Don-2-IFF: 1/High Pole-B

M: 2 Cegielski-Sulzer diesels; 2 CP props; 1,920 hp (plus two 75-kw electric motors for quiet, 6-kt. operations)

Electric: 675 kVA Endurance: 15 days Range: 3,000/13

Man: 5 officers, 23 men

Remarks: Replaced a navigational buoy tender/light cable layer of the same name. Intended for navigational buoy tending and hydrographic survey, for which 4 echosounders are fitted. Bow-thruster of 176 hp.

• 1 modified Kondor-II class

KARL FRIEDRICH GAUSS

Remarks: Since 1978. No armament; white-painted. Data as for Kondor-II-class minesweepers. Has more extensive superstructure, twin kingposts aft for handling boats, buoys, etc.

• 1 Soviet Kamenka class

Bldr: Szczecin SY, Poland (In serv. 1972)

Buk



Buk

1983

D: 703 tons (fl) S: 13.7 kts Dim: 53.5 × 9.1 × 2.6

M: 2 Zgoda-Sulzer diesels; 2 CP props; 1,765 hp Range: 4,000/10

REMARKS: Buoy tender and survey ship; one 5-ton crane.

◆ 3 Arkona class (In serv. 1965-70)

ARKONA DARSSER ORT STUBBENKAMMER

D: 55 tons S: 10 kts M: Diesel

REMARKS: Also act as navigational buoy tenders.

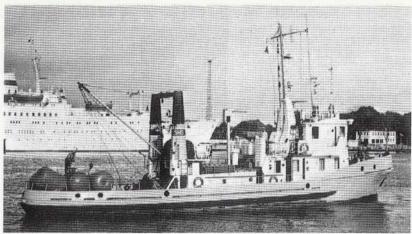
• 8 Breitling-class buoy tenders (In serv. 1971-72)

Breitling, Esper Ort, Golwitz, Grass Ort, Landtieff, Palmer Ort, Ramzow, Rosen Ort

D: 158 tons (320 fl) S: 11.5 kts Dim: 29.6 × 6.2 × 1.9

M: 1 diesel; 1 prop; 580 hp

HYDROGRAPHIC SURVEY SHIPS (continued)



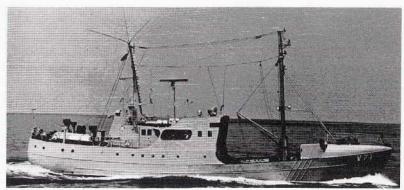
Breitling-note "SHD" logo on kingpost-stack

1983

EXPERIMENTAL SHIPS V = Versuch (Research)

♦ 1 ex-civilian research ship (In serv. late 1950s)

V 84 RÜGEN (ex-V 71, ex-Meteor)



Rügen (V 84) - with old number

1976

D: 700 tons S: 10 kts Dim: 50.8 × 3.8 × 3.4 Range: 7,900/9 Man: 30 tot. Electron Equipt: Radar: 1/TSR-333 M: 1 diesel; 1 prop; 540 hp

REMARKS: Built as a fishing boat.

♦ 1 Libelle-class torpedo boat (In serv. 1975)

V 87

Note: Believed to have been the Libelle-class prototype; see data on earlier page.

♦ 3 Kondor-II-class minesweepers (In serv. 1971-78)

V 381 PRITZWARK V 382 WITTSTOCK V 383 SCHÖNEBECK



Schönebeck (V 383) - note deckhouse aft

1978

Remarks: Involved in trials of new mine-countermeasures equipment, including the 1-Ss/e array for the Kondor-II class. Data otherwise as for minesweeper-designated sisters.

♦ 1 Kondor-I-class minesweeper (In serv. 1968-70)

V 85N. (ex-V 31)

REMARKS: Data as for standard minesweeper/gunboat version. Possible name: Eisleben.

AMPHIBIOUS WARFARE SUPPORT SHIPS

♦ 2 Frosch-II class Bldr: Peenewerft, Wolgast (1980)

E 35 Nordperd E 36 Südperd

D: 2,000 tons (fl) **S:** 16 kts **Dim:** $98.0 \times 12.5 \times 2.8$ **A:** 4/57-mm AA (II \times 2) — 4/25-mm AA (II \times 2) — mines



Nordperd (E 35) - note 2 twin 25-mm AA at bow

M.O.D., Bonn, 1984

Electron Equipt: Radar: 1/TSR-333, 1/Strut Curve, 1/Muff Cob IFF: 1/Square Head, 1/High Pole-A M: 2 Type 40D diesels; 2 props; 5,000 hp Man: 120 tot.

Remarks: Differ from Frosch-I in having a large crane amidships and two cargo hatches, and in having 25-mm (mounted right forward to cover the beach) in place of 30-mm AA. Although they have an auxiliary-series pendant number, the bow ramp is retained to permit a beaching capability, and they presumably can be used as assault landing ships if needed. Believed to carry munitions, at least in peacetime.

STORES SHIPS

♦ 7 (+?) Darss class Bldr: Neptunwerft, Rostock (In serv. 1982-84)

E 11 Monchgut E 61 Wittow V 86 Werdau

E 12 Graniz E . . . Kühlung D 41 Jasmund (In serv. 6-85)

E 41 Darss E . . . N. . .



Darss (E 41)

M.O.D., Bonn, 8-83

D: 1,500 tons (fl) **S:** 12-14 kts **Dim:** $68.5(62.0 \text{ pp}) \times 10.0 \times 3.5$ **A:** Provision for 6/25-mm AA (II \times 3)

Electron Equipt: Radar: 1/TSR-333—IFF: 1/High Pole-B

M: 1 diesel; 1 prop; 1,600 hp Man: 60 tot.

Remarks: E 41 launched 27-7-82. Cargo: Approx. 650 tons missiles, ammunition, dry stores, etc., plus about 200 tons cargo fuel. Intended for dead-in-the-water replenishment at sea, as indicated by the heavy rubbing strakes on the hull sides and the 12 rubber fenders carried. Can refuel two ships simultaneously over stern. Crane between the two holds is the same 15-25-ton model used on the Frosch-II class. "V" pendant for *Werdau* indicates trials employment. D 41 is equipped as an intelligence collector, no crane, 5-m radome abaft stack.

OILERS

 1 Soviet Baskunchak class 1964-68) Bldr: Kamysh Burun SY, Kerch' (In serv.

C 42 USEDOM (ex-C27)



Usedom (C 42)

1982

D: 2,940 tons S: 13.2 kts Dim: 83.6 $(74.0 \text{ pp}) \times 12.0 \times 4.6$ Electron Equipt: Radar: 1/TSR-333

M: 1/8DR43/61 VI diesel; 1 prop; 2,000 hp Electric: 325 kw Fuel: 124 tons Range: 5,000/12.6 Man: 30 tot.

Remarks: 1,770 grt/1,660 dwt. Cargo: 1,490 tons (9,993 barrels fuel oil). Has provision for mounting 4/25-mm AA (II \times 2), one mount forward, one aft.

OILERS (continued)

♦ 3 Hiddensee class Bldr: Peenewerft, Wolgast (In serv. 1960-61)

C 24 HIDDENSEE C 43 POEL C 61 RIEMS



Poel (C 43)

L. & L. Van Ginderen, 9-83

D: 1,450 tons (fl) S: 12 kts Dim: 53.7 × 9.0 × 4.5 Electron Equipt: Radar: 1/TSR-333 M: 2 diesels; 1,400 hp Man: 26 tot.

Remarks: Laid down during World War II. Sahel in French Navy was a sister. Cargo: 650 tons. Provision for 4/25-mm AA (II × 2), one mount forward, one aft. C 24 re-engined and partially automated in 1984, reducing crew to 12 total.

Note: The surviving "Kümo"-series support ships, Ruden and Vilm, were stricken 1983-84.

TRAINING SHIPS S = Schulschiff (Schoolship)

♦ 1 Polish Wodnik class Bldr: Gdansk SY (In serv. 6-7-76)

S 61 WILHELM PIECK



Wilhelm Pieck (S 61) — at Piraeus, Greece

L. & L. Van Ginderen, 1984

D: 1,800 tons (fl) **S:** 17 kts **Dim:** $73.0 \times 12.0 \times 4.0$ **A:** 4/30-mm AA (II × 2) — 4/25-mm AA (II × 2)

Electron Equipt: Radar: 2/TSR-333, 1/Drum Tilt Man: 80 tot.

M: 2 Cegielski-Sulzer 6 TD48 diesels; 2 props; 3,600 hp Electric: 530 kw

Remarks: In service 6-7-76. Sister to *Wodnik* and *Gryf* in Polish Navy and *Oka* and *Luga* in Soviet Navy. Design developed from that of the Soviet Moma-class surveying ships.

SALVAGE SHIP

♦ 1 Polish Piast class

Bldr: Gdansk SY, 1977

A 46 Otto Von Guericke



Otto Von Guericke

M.O.D., Bonn, 1983

D: 1,560 tons (1,732 fl) S: 16.5 kts Dim: 73.2 × 10.0 × 4.0 M: 2 Cegielski-Sulzer 6DT48 diesels; 2 props; 3,600 hp Range: 3,000/12 Electron Equipt: Radar: 1/TSR-333 A: 8/25-mm AA (II × 4)

Remarks: Sister to Polish *Piast* and *Lech*. Armed 1983. Has diving bell. Built on Soviet Moma-class survey-ship hull and propulsion plant.

AIR/SEA RESCUE SHIP

1 converted Havel-class fishing trawler (In serv. 1971)
 U 33 Hugo Eckener



Hugo Eckener (U 33)

197

D: 384 tons (488 fl) S: 10.6 kts Dim: 37.66 (32.95 pp) × 8.20 × 3.63 max. M: 1 type 8 NVD36A1 diesel; 578 hp Electric: 280 kw Man: 20 tot. Range: 6,500/10 Electron Equipt: Radar: 1/TSR-333

MISCELLANEOUS SHIPS

♦ 2 Kondor-I-class torpedo retriever/target ships

B 82 Libben (ex-B 74, ex-B 62) B 81 N. . . (ex-B 73)



Libben (B 62) - old number

1980

Remarks: Converted Kondor-I-class minesweepers, which they basically resemble. No armament. Ramp at stern for torpedo recovery. Radar reflector array on mast, below TSR-333 radar. See data under minesweepers.

♦ 1 yacht (In serv. circa 1970)

OSTSEELAND

Remarks: Kondor-I minesweeper hull; large, rakish superstructure. Used by head of state.

Note: Original state yacht Ostseeland, renamed Ostseeland II by 1981, may still be in service.

- several small diving tenders
- up to 11 Jugend-class barracks barges serv. 1961-64)

Bldr: Peenewerft, Wolgast (In

D: 1,800 tons (fl) **S:** $70.0 \times 12.2 \times 2.4$

Remarks: Accommodations for 300. Provision for 4/25-mm AA (II × 2)

• 1 small cable tender

Freesendorf Built 1963

MISCELLANEOUS SHIPS (continued)

♦ 1 Soviet Type KM U1 tug (In serv. 1983)

A 16

D: 300 tons (fl) S: 11 kts Dim: 29.3 × 8.2 (wl) × 3.7(moulded depth) M: 2 6-cyl. diesels; 1 CP prop; 1,200 hp

♦ 1 Soviet Prometey class (Type KM U1) tug Bldr: Gorokhovets SY,

A 16 (In serv. 1983)

D: 319 tons (fl) S: 12 kts Dim: 29.8 (28.2pp) × 8.3 × 3.2 M: 2 Type 6D30/50-4 diesels; 2 Kort-nozzle CP props; 1,200 hp Range: 1,800/12 Electric: 50 kw Man: 3-5 tot.

Remarks: Has ice-strengthened hull, 14-ton bollard pull. Over 100 sisters built in U.S.S.R. since 1971.

Bldr: Peenewerft, Wolgast (In ♦ 1 Type 700 seagoing tug (also salvage tug) serv. 1964)

A 14 THALE



Thale (A 14)

1978

D: 700 tons (792 fl) S: 12.8 kts Dim: 44.7 × 10.7 × 3.9 Electron Equipt: Radar: 1/TSR-333 Range: 4,000/12 M: 2 diesels; 2 props; 1,680 hp Man: 6 officers, 33 men

Remarks: 505 grt. Sister to Bulgarian Jupiter. Bollard pull: 16 tons. Provision made for 2/25-mm AA (II × 2).

♦ 7 Type 270 harbor tugs Bldr: Peenewerft, Wolgast (In serv. 1959-60)

A 23 ELBE A 11 PEENE A 13 BELT

A 72 ERICH KRENKEL A 12 SPEE A 22 HAVEL A 71 ODER



Elbe (A 23)

Remarks: Provision for 2/25-mm AA (II × 1)

D: 270 tons S: 12 kts Dim: 30.0 × 5.5 × 2.5

♦ 6 Ibis-class fireboats Bldr: Volkswerft, Berlin (In serv. 1959-60) F31 F32 F45 F46 F82 F83

M; 2 Buckau-Wolf GNVD26A diesels; 1 prop; 550 hp Man: 12 tot.



Ibis class F 46

L. & L. Van Ginderen, 1980

D: 124 tons S: 12 kts Dim: 32.3 (29.3 pp) × 5.9 ×1.6 M: 2 Buckau-Wolf 6NVD26A diesels; 1 prop; 540 hp Man: 3 officers, 10 men

REMARKS: Three fire monitors. Can also act as tugs. Three sisters built for Egypt, 1961.

Bldr: VEB, Rosslau/Elbe 5 Gustav Koenigs-class harbor fuel lighters C16 C17 C25 C76 C77

SOCIETY FOR SPORTS AND MECHANICS

The Naval College of this paramilitary youth organization maintains a number of craft for training, the largest of which is the Ernst Thaelmann.

1 converted Kondor-I-class minesweeper

ERNST THAELMANN

Remarks: Conversion completed 19-8-77. Superstructure enlarged; carries 10 crew and 28 trainees.

Bldr: Warnowerft, Warnow (In serv. 1951) ♦ 1 sail-training ship WILHELM PIECK



Wilhelm Pieck

1978

D: . . . S: 8 kts (on diesel) Dim: 41.0 × 7.7 × 5.5 M: 1 diesel; 100 hp Fuel: 16 tons Man: 13 crew plus 24 trainees

GERMANY-GERMAN DEMOCRATIC REPUBLIC (continued) SOCIETY FOR SPORTS AND MECHANICS (continued)

There are also a number of small craft used for youth training, including: . . . MAB-14 class
 Bldr: Berliner Yachtwerft (In serv. 1979-. . .)

D: 18-24 tons (fl) S: . . . Dim: 14.55 (13.13 wl) × 3.97 × 1.05

M: 1 Type 6VD15.4/12-1 diesel; 1 prop; 140 hp

GERMANY

(WEST)

Federal Republic of Germany

Personnel: approx. 38,500 men (including 5,600 officers and 6,700 naval aviation personnel)

Merchant Marine (1984): 1,813 ships — 6,242,467 grt (tankers: 130 ships — 1,743,558 grt)

Ships In Service, Under Construction, Or Ordered As Of 1 January 1986

| | L | Tons | Main armament |
|---------------------------------|--------------------|----------------|--|
| • 24 submarines | | | |
| 18 Type 206 6 Type 205 | 1972-74 1961-68 | 450 370 | 8/533-mm TT 8/533-mm TT |
| • 7 destroyers | | | |
| 3 Charles F. Adams 4 Hamburg | 1967-69 1960-63 | 3,370 3,400 | 1/Tartar, 2/127-mm DP, 1/ASROC 4/MM 38, 3/100-mm, 8/40-mm AA, 4/ASW TT |
| • 9 frigates | | | |
| 6 Type 122 | 1979-82 | 2,900 | 8/Harpoon, 1/Sea Sparrow, 1/76-mm, 4/ASW TT, 2/helicopters |
| 3 Köln | 1958-62 | 1,750 | 2/100-mm DP, 6/40-mm AA, 2/ASW RL, 4/ASW TT |
| • 5 corvettes | | | |
| 5 Тнетіѕ | 1960-62 | 604 | 2/40-mm AA, $1/ASW$ RL, $4/ASW$ TT |
| ♦ 40 guided-missile | boats | | |
| 10 Type 143A | 1981-83 | 300 | 4/MM 38, 1/76-mm DP, 1/RAM system, mines |
| 10 Type 143 | 1973-76 | 295 | 4/MM 38, 2/76-mm DP, 2/533-mm TT |
| 20 Type 148 | 1972-75 | 234 | 4/MM 38, 1/76-mm DP, 1/40-mm AA |

♦ 64 (+10+20) minesweepers/minehunters

NAVAL AVIATION:

1 squadron of Starfighter (45F-104 G and 11 TF-1046 2-seat) all-weather interceptor attack and one squadron of 26 (RF-104G) reconnaissance airplanes. All are to be replaced 1986-87. Characteristics are:

Length: 16.61 meters Wingspan: 6.68 meters Takeoff weight: 9,900 kg

Takeoff weight: 9,900 kg Motor: 1 G.E. J79 SE 11A turbojet, 7,170 kg thrust

Max. speed: Mach 2 Altitude: 50,000 feet

Range: 250 to 600 nautical miles, depending on equipment

Weapons: 4,000 kg maximum (bombs, rockets, Kormoran ASM, etc.)

1 squadron of 19 Bréguet Atlantic-1150 aircraft, of which 5 have been modified for electronic warfare. The ASW aircraft underwent modernization in 1981-83.

1 squadron of 22 Mk 43 Sea King helicopters for search-and-rescue operations. The Sea Kings are being upgraded to permit carrying 4 Sea Skua anti-ship missiles, a Sea Spray Mk 3 search radar, electronic intercept gear, chaff, and a computer data system. The first two were to have completed by 1984 and all by 1988, but delays have moved initial redeliveries to 1987.

On 7-4-76 the German government decided to begin construction of 112 MRCA Tornado variable-geometry fighter-bombers for the Navy. The first four entered service in 7-82 and 47 were operational by 7-84. Characteristics are:

Length: 17.2 meters

Wingspan: 13.90 meters max./8.40 meters min.

Maximum takeoff weight: 26,000 kg

Maximum speed: Mach 2.2

Ceiling: 15,200 m

Weapons: 4 Kormoran ASM or 10 Mk 83 or Mk 82 bombs or 8 BL 755 cluster bombs—plus 2 AIM 9 Sidewinder and a 23-mm gun

Deliveries were scheduled for: 1 in 1981, 26 in 1982, 22 in 1983, 32 in 1986, 16 in 1987, and 15 in 1988, but total production may cease at 95.



Tornado

1982

Twelve Westland/Bréguet WG-13 Lynx Mk 88 ASW helicopters were bought for the new Type 122 frigates. The Bendix DAQS-18 dipping sonar is employed. First 4 delivered 1981, 8 in 1982, and 4 in 1983. Two more ordered 11-84 for delivery 1986. There are also 20 Dornier DO-28D-2 liaison aircraft, an HFB 32 ECM aircraft, a small number of Piaggio P 149D basic trainers, and 4 IAI Westwind target tugs.



Lynx Mk 88 of the West German Navy

P. Voss, 8-84

WEAPONS AND SYSTEMS

With a few exceptions, such as torpedoes, West German ships have weapons and systems of foreign origin.

(A) MISSILES

♦ Surface-to-air

Standard Tartar SM-1 MR on board the 3 Charles F. Adams-class destroyers

In conjunction with the U.S.A., the General Dynamics RIM-116A RAM (Rolling Airframe Missile) is being developed as a close-in defense weapon. The system will carry 21 missiles per EX-31 launcher. A total of 63 launchers are programmed for purchase.

♦ Surface-to-surface

MM 38 Exocet on board *Hamburg*-class destroyers and Types 143A, 143, and 148 guided-missile patrol boats. The U.S. Harpoon (RGM-84A) is carried by the Type 122 frigates and by refitted units of the *Charles F. Adams*-class destroyers. The Anglo-French ANS missile will replace both MM 38 Exocet and the Kormoran air-launched SSM from the mid-1990s.

♦ Air-to-surface

Kormoran missiles, carried by F-104 and Tornado aircraft. Kormoran II, with a new digital radar seeker from Thomson-CSF, will enter service about 1989.

(B) GUNS

Automatic 127-mm U.S. Mk 42 Mod. 10 on Adams-class destroyers

French Model 1953 100-mm dual-purpose on Hamburg-class destroyers, Köln-class frigates, Rhein-class tenders, and the training ship Deutschland

OTO Melara Compact 76-mm guns on board Types 143, 143A, and 148 guided-missile patrol boats

40-mm (70-caliber) Bofors, in single or twin mounts on many types of ships. Replaced by open Breda mountings in combatants

20-mm Oerlikon and Rheinmetall

(C) ANTISUBMARINE WARFARE

· Rocket launchers

Quadruple 375-mm Bofors, automatically loaded in a vertical position The U.S. ASROC system, with a Mk 112 octuple launcher for missiles having a Mk 46 ASW torpedo payload

Torpedoes

U.S. Mk 37 Mod. 0 on submarines (possibly no longer in use)

ANTISUBMARINE WARFARE (continued)

U.S. Mk 44 and Mk 46 on Charles F. Adams-class destroyers, Type 122 frigates, and Bréguet Atlantic-1150 ASW patrol aircraft

Wire-guided "Seeal (SST-4)" type (20,000 m range) on Type 143 missile boats, and submarines

Wire-guided "Seeschlange" type on Type 206 submarines; range; 10,000 m

(D) ELECTRONICS

In addition to the U.S. radars mounted in the *Charles F. Adams*-class destroyers, the West German Navy uses the following Dutch radars (Hollandse Signaal-apparaaten):

LW-02 long-range air search (Band D)

SGR-105 multi-purpose search (Band E-F)

SGR-103 surface search (Band I)

Band X for 100-mm and 40-mm fire control

Type 148 missile patrol boats have a Thomson-CSF Triton target-designation radar

and Vega fire-control system with Pollux radar.

Type 143 missile patrol boats carry the AGIS fire-control system combined with Dutch H.S.A. WM 27 M radar. AGIS has two UNIVAC computers, one for fire control and the other for real-time threat-processing. WM 27 has two antennas within its dome, one for search and one for tracking. An automatic data link permits AGIS to relay information with other units of the Type 143, Charles F. Adams-class, and with future combatants destined for service with the fleet operating from Glücksberg-Meierwik. The Adams-class destroyers are receiving the Lockheed-built Mk 86 gun-fire-control system, with SPQ-9 and SPG-60 radar. As a countermeasure system, the Breda SCLAR chaff rocket launcher (20 tubes) has been adopted. (U.S. Mk 36 Super RBOC on the Adams class).

Aside from the SQS-23 on the Adams class, sonars are of West German origin.

SUBMARINES

♦ 0 (+12+6) Type 211 Bldr: . . .

D: 1,040 tons surf./1,300 sub. S: 11/23 kts

Dim: 59.00 × 5.40 × 4.50 (surf.)

A: 8/533-mm TT - (14 Seeal-3 ASW and DM2A3 torpedoes)

Electron Equipt: Radar: . . . - Sonar: Krupp-Atlas. . .

M: 2 MTU 16V396 SB83, 1,260-bhp diesels; 2/870-kw generators; electric drive;

1 prop; 6,000 hp Fuel: 100 tons

Range: 5,000/8 snorkel Endurance: 40 days Man: 20 tot.

Remarks: Six of this general type ordered from Thyssen Nordseewerke for Norway as the "Type 210," for delivery beginning 1989. Diving depth 250 m. In German Navy will replace Type 205 and some Type 206, with first 9 delivering 1990-93, the rest by 1997. To use a Norwegian-developed, Kongsberg MSI-90U fire control system. Program remained in concept planning through mid-1985.

 18 Type 206 Bldrs: (A) — Howaldtswerke-Deutsche Werft, Kiel; (B) — Rheinstahl Nordseewerke, Emden

| | Bldr | Laid down | L | In serv. |
|------------|------|-----------|----------|----------|
| S 192 U 13 | A | 24-11-69 | 28-9-71 | 19-4-73 |
| S 193 U 14 | В | 10-9-70 | 1-2-72 | 19-4-73 |
| S 194 U 15 | A | 29-5-70 | 15-6-72 | 17-4-74 |
| S 195 U 16 | В | 22-4-71 | 29-8-72 | 9-11-73 |
| S 196 U 17 | - A | 19-10-70 | 10-10-72 | 28-11-73 |
| S 197 U 18 | В | 28-7-71 | 31-10-72 | 19-12-73 |
| S 198 U 19 | A | 14-1-71 | 15-12-72 | 9-11-73 |
| S 199 U 20 | В | 15-2-72 | 16-1-73 | 24-5-74 |
| S 170 U 21 | A | 14-4-71 | 9-3-73 | 16-8-74 |
| S 171 U 22 | В | 3-5-72 | 27-3-73 | 26-7-74 |
| S 172 U 23 | В | 21-8-72 | 22-5-73 | 2-5-75 |
| S 173 U 24 | В | 10-7-72 | 26-6-73 | 16-10-74 |
| S 174 U 25 | A | 6-10-71 | 23-5-73 | 14-6-74 |
| S 175 U 26 | В | 17-11-72 | 20-11-73 | 13-3-75 |
| S 176 U 27 | A | 11-1-72 | 21-8-73 | 16-10-74 |
| S 177 U 28 | В | 26-1-72 | 22-1-74 | 18-12-74 |
| S 178 U 29 | A | 29-2-72 | 5-11-73 | 27-11-74 |
| S 179 U 30 | В | 27-4-73 | 26-3-74 | 13-3-75 |



U 20 (S 199) L. & L. Van Ginderen, 5-84



U 15 (S 194)

P. Voss, 4-84

D: 450 tons surf./500 tons sub. S: 10 surf./17 kts sub. (5 snorkel)

Dim: $48.6 \times 4.6 \times 4.3$

A: 8/533-mm TT—(16 torpedoes)—24 mines in external container

Electron Equipt: Radar: 1/Thomson-CSF Calypso

Sonar: 1/WSU AN 410A4, 1/GHG AN 5039A1, 1/DBQS-21D, 1/DUUX-2

M: 2 MTU 12V493AZ diesels; 600 hp each, 2/405-kw generators; 1/2,300-hp electric motor

Range: 4,500/5 (snorkel); 200/5 submerged Man: 4 officers, 18 men

Remarks: U 13 to U 24 authorized in 1969, U 25 to U 30 in 2-70. An external "minebelt" container has been developed for these submarines to permit them to carry a full complement of torpedoes plus 24 mines. Three batteries, 92 cells each. Now have H.S.A. Mk 8; new Krupp-Atlas control systems are to be installed in 12 of the 18 by HDW, with recommissionings now delayed to 1989-91. Modernized units to be typed 206A.

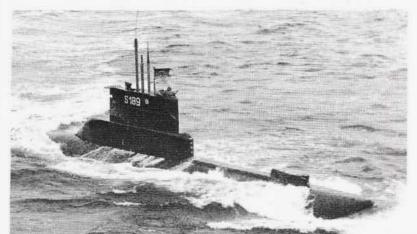
♦ 6 Type 205 Bldr: Howaldtswerke, Kiel

| | Laid down | L | In serv. |
|------------|-----------|----------|----------|
| S 180 U 1 | 1-2-65 | 17-2-67 | 6-6-67 |
| S 181 U 2 | 1-9-64 | 15-7-66 | 11-10-66 |
| S 188 U 9 | 10-12-64 | 20-10-66 | 11-4-67 |
| S 189 U 10 | 15-7-65 | 5-6-67 | 28-11-67 |
| S 190 U 11 | 1-4-66 | 9-2-68 | 21-6-68 |
| S 191 U 12 | 1-9-66 | 10-9-68 | 14-1-69 |



U 9 (S 188)

L. & L. Van Ginderen, 5-84



U 10 (S 189)

Marineamt, 1981

D: 419 tons surf./450 sub. **S:** 10 surf./17 kts sub. **Dim:** $43.5 \times 4.6 \times 3.8$ **A:** 8/533-mm TT

Electron Equipt: Radar: 1/Thomson-CSF Calypso

Sonar: 1/SRS-M1H, 1/GHG AN5039A1

M: 2 MTU 12V493AZ, 600-hp diesels, 2/405-kw generators, 1/2,300-hp electric motor

Man: 4 officers, 17 men

SUBMARINES (continued)

REMARKS: U 10 is 43.8-m overall; U 11, 12: 45.8-m overall. Diving depth: 150M. The poor quality of the antimagnetic steel used in the first six of this class caused serious pitting, which made it necessary to rebuild the U 1 and U 2 (originally launched 21-10-61 and 25-1-62) with regular steel. Beginning with the U 9, laid down in 1964, these submarines were built with a new antimagnetic steel. Have H.S.A. Mk 8 torpedo f.c.s. The U3 was stricken in 1968, the U4 and U8 in 1974, the U5 in 1975, and the U6 and U7 in 1974.

GUIDED-MISSILE DESTROYERS

3 U.S. Charles F. Adams (Type 103B) class
 Bldr: Bath Iron Works, Bath,

| | Laid down | L | In serv. |
|---------------------------|-----------|---------|----------|
| D 185 LÜTJENS (ex-DDG 28) | 1-3-66 | 11-8-67 | 22-3-69 |
| D 186 MÖLDERS (ex-DDG 29) | 12-4-66 | 13-4-68 | 20-9-69 |
| D 187 ROMMEL (ex-DDG 30) | 22-8-67 | 1-2-69 | 2-5-70 |



Mölders (D 186) - as modernized

L. & L. Van Ginderen, 5-84



Lütjens (D 185) - prior to modernization

L. & L. Van Ginderen, 7-84

D: 3,550 tons (4,720 ft)
 S: 35 kts
 Dim: 134.4 (128.1 pp) × 14.38 × 6.4 (max)
 A: 1/Tartar Mk 13 missile launcher (40 Harpoon and Standard SM-1 MR missiles) - 2/127-mm Mk 42 DP (I × 2) - 6/324-mm Mk 32 ASW TT (III × 2) - 1 Mk 112 ASROC ASW RL (VIII × 1)

Electron Equipt: Radar: 1/SPS-40, 1/SPS-10, 1/SPS-52, 1/Kelvin-Hughes 14/9, 2/SPG-51C, SPQ-9, 1/SPG-60
Sonar: 1/SQS-23—EW: FL-1800, 2/Mk 36 RBOC

chaff - TACAN: URN-20

M: GT; 2 props; 70,000 hp Electric: 3,000 kw

Boilers: 4 Combustion Engineering, 84 kg/cm² pressure, superheat 500°C Fuel: 950 tons Range: 1600/30; 4,030/18 Man: 21 officers, 319 men

Remarks: Authorized 1964. They differ in several ways, especially in profile, from the Charles F. Adams design, on which they are based. Installation of the SM-1 MR system and digitalization of some computer equipment was completed 1981-82. All



Rommel (D 187) - as modernized

L. & L. Van Ginderen, 9-85

three were further modernized, with most of the improvements originally planned for the U.S. Navy units of the class: the Mk 13 missile system was revised to permit carrying Harpoon anti-ship missiles, the Mk 68 gunfire control system was replaced by the Mk 86 GFCS with SPQ-9 and SPG-60 radars (the latter permitting a third SAM fire control channel as well), the U.S. SYS-1 computerized data systems, the Mk 36 Super RBOC chaff system, and the substitution of the German FL-1800 EW system for WLR-6. D 185 began modernization 5-4-82 at Howaldtswerke, completing 29-3-84. D 186 refitted 12-83 to 7-85, and D 187 4-85 to 12-86. Have Satir-1 NTDS data link.

♦ 4 Hamburg class (Type 101B) Bldr: H. C. Stülcken, Hamburg

| | Laid down | _ L | In serv. |
|--------------------------|-----------|---------|----------|
| D 181 Hamburg | 29-1-59 | 26-3-60 | 23-3-64 |
| D 182 Schleswig-Holstein | 20-8-59 | 20-8-60 | 12-10-64 |
| D 183 BAYERN | 14-9-60 | 14-8-62 | 6-7-65 |
| D 184 Hessen | 15-2-61 | 4-5-63 | 8-10-68 |



Hamburg (D 181)

G. Gyssels, 3-85



Bayern (D 183)

P. Voss, 10-84

D: 3,500 tons (4,700 fl) **S:** 35 kts **Dim:** 133.7 (128.0 pp) \times 13.4 \times 5.2 (max.) **A:** 4/MM 38 Exocet SSM - 3/100-mm Mod. 1953 DP (I \times 3) - 8/40-mm Breda AA (II \times 4) - 4/533-mm ASW TT - 2/375-mm Bofors ASW RL (IV \times 2) - 2/d.c. racks (12 d.c.) - 60 - 80 mines

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/DA-08, 1/LW-04, 1/SGR-103-3/M45

Sonar: 1/Atlas ELAC 1BV med. freq. EW: WLR-6, 2/SCLAR chaff RL

M: 2 sets GT; 2 props; 68,000 hp Boilers: 4/59 kg/cm², 465°C Fuel: 810 tons Electric: 5,400 kw Range: 920/34; 3,400/18 Man: 270 tot.

Remarks: Between the beginning of 1975 and the end of 1977, refitted with 4/MM 38 to replace mount C, in the following order: D 184, D 181, D 182, and D 183. Five fixed anti-ship torpedo tubes (3 in bows, 2 aft) removed, 40-mm replaced by later model, new air-search radar. There are three H.S.A. M4 radar directors for the 100-mm guns. The d.c. racks are bolted to the mine rails. Further modernization, beginning with D 184, is planned, including the installation of 2/21-missile EX-31 launchers for the RAM SAM system, and a new computer data system.

GUIDED-MISSILE FRIGATES

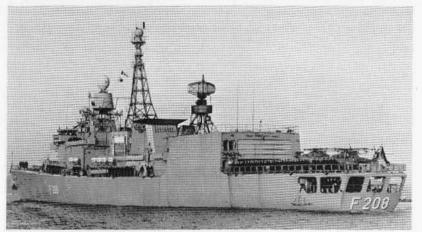
♦ 0 (+6) Type 124 class

Remarks: In project definition through the end of 1985 was a program for six new guided-missile frigates, to be based in part on the successful Type 122 design. A delay may permit adopting features of the "Nato Frigate." The ships will rationally replace the four *Hamburg*-class destroyers and the three remaining *Köln*-class frigates in the 1990s. They are intended to be delivered in 1993-96.

♦ 6 (+2) Bremen (Type 122) class

| | Bldr | Laid down | L | In serv. |
|-----------------------|-----------------------|-----------|----------|----------|
| F 207 Bremen | Bremer-Vulkan | 9-7-79 | 27-9-79 | 7-5-82 |
| F 208 NIEDERSACHSEN | AG Weser, Bremen | 9-11-79 | 9-6-80 | 15-10-82 |
| F 209 RHEINLAND-PFALZ | Blohm + Voss, Hamburg | 25-9-79 | 3-9-80 | 9-5-83 |
| F 210 EMDEN | Nordseewerke, Emden | 23-6-80 | 17-12-80 | 9-10-83 |
| F 211 KÖLN | Blohm + Voss, Hamburg | 16-6-80 | 29-5-81 | 19-10-84 |
| F 212 KARLSRUHE | Howaldtswerke, Kiel | 10-3-81 | 8-1-82 | 19-4-84 |
| F Augsburg | Thyssen, Emden | * * * | | |
| F LÜBECK | Bremer Vulcan | *** | 404 K | |

GUIDED MISSILE FRIGATES (continued)



Niedersachsen (F 208) - with 2 Lynx on deck

G. Gyssels, 2-85



Bremen (F 207)

P. Voss, 8-83



Rheinland-Pfalz (F 209)

L. & L. Van Ginderen, 4-85



Karlsruhe (F 212)

P. Voss, 4-84

D: 2,930 tons (3,780 fl) S: 30 kts

Dim: 130.0 (121.8 wl) × 14.4 × 4.26 (6.0 sonar)

A: 8/Harpoon SSM (IV × 2) - 1/NATO Sea Sparrow SAM system (VIII × 1, Mk 29 launcher, 24 RIM-7M missiles) -1/76-mm OTO Melara DP-4/324mm Mk 32 ASW TT (I × 4)-2/Lynx Mk 88 ASW helicopters

Electron Equipt: Radar: 1/3RM20, 1/DA-08, 1/WM-25, 1/STIR Sonar: 1/DSQS-21B(Z) (bow-mounted)

EW: FL 1800S intercept array (7.5-17 GHz), Mk 36 Super RBOC chaff RL (VI × 4)

M: CODOG: 2 G.E.-Fiat LM 2500 GT (50,000 hp); 2 MTU 20V956 TB92 diesels (10,400 hp); 2/5-bladed Escher-Wyss CP props

Electric: 3,000 kw (4/750-kw diesel sets) Range: 5,700/17 Fuel: 610 tons Man: 21 officers, 160 men (plus 6-officer/12-man air complement)

REMARKS: Germanized version of Dutch Kortenaer class. Ordered 7-77; two additional canceled. The helicopters will be equipped with DAQS-13D dipping sonar. Two RAM point-defense SAM launchers are to be added atop the hangar. Fin stabilizers fitted. Have SATIR tactical data sysem, Canadian Bear Trap helicopter landing system, and H.S.A. Vesta helicopter transponder. Fitted with U.S. Prarie/Masker bubbler system to reduce radiated noise, fin stabilizers, a citadel nuclear-biological-gas protection system, and the U.S. SLQ-25 Nixie towed torpedo decoy. F 212 has a revised engine air intake system. Carry 16 torpedoes for helos, 8 for tubes. Construction of two additional units was approved by the government 7-85.

FRIGATES

Bldr: H. C. Stülcken, Hamburg ♦ 3 Köln class (Type 120)

| | Laid down | L | In serv. |
|--------------------|-----------|---------|----------|
| F 222 Augsburg | 29-10-58 | 15-8-59 | 7-4-62 |
| F 224 LÜBECK | 28-10-59 | 23-7-60 | 6-7-63 |
| F 225 Braunschweig | 28-7-60 | 3-2-62 | 16-6-64 |



Augsberg (F 222)

L. & L. Van Ginderen, 5-85

D: 2,425 tons (2,970 fl) S: 30 kts (20 on diesels)

Dim: 109.83 (105.0 pp) × 10.5 × 4.61 (fl)

A: 2/100-mm Mod. 1953 DP (I × 2) - 6/40-mm AA (II × 2, I × 2) - 2/375-mm Bofors ASW RL (IV × 2; 70 rockets) -4/533-mm ASW TT (I × 4) -2/d.c. racks (12 d.c.) - 82 mines

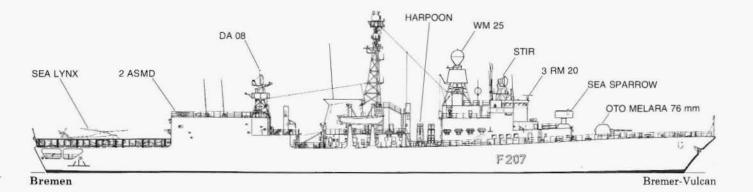
Electron Equipt: Radar: 1/DA-02, 1/SGR-103, 1/Kelvin-Hughes 14/9, 2/M 44 fire-control, 1/M 45 fire-control

Sonar: 1/PAE/CWE MF hull-mounted - EW: . . . intercept M: CODAG: 4 M.A.N. V-16-cylinder diesels (each 3,000 hp); 2 Brown-Boveri gas

turbines (each 13,000 hp); 2 CP props; 36,000 hp Electric: 2,700 kw Fuel: 361 tons Range: 900/30; 2,910/22

Man: 17 officers, 193 men

REMARKS: The rocket-launcher magazines carry 72 projectiles. Two diesels and one gas turbine on each of the two shafts. Made 33 knots on trials. Three sisters disposed of: Köln (F 220) on 17-12-82 for static training at the Naval Technical School; Karlsrühe (F 223) on 27-12-82, to Turkey 28-3-83; and Emden (F 221) on 23-9-83 for transfer to Turkey late 1983. The three survivors are to be retained into the mid-1990s. F 225 heavily damaged in collision with HMS Plymouth, 11-4-84.



CORVETTES

♦ 0 (+3) Type 423

Remarks: Programmed class for delivery 1990-93 to replace the *Thetis* (Type 420) class. No data available; program probably canceled or deferred.

| • 5 Thetis class (Type 420) | | Bldr: R | oland Werft, Bremen-Hemelingen |
|-----------------------------|-----------|---------|--------------------------------|
| | Laid down | L | In serv. |
| P 6052 Thetis | 19-6-59 | 22-3-60 | 1-7-61 |
| P 6053 HERMES | 8-10-59 | 9-8-60 | 16-12-61 |
| P 6054 NAJADE | 22-3-60 | 6-12-60 | 12-5-62 |
| P 6055 TRITON | 15-8-60 | 5-8-61 | 10-11-62 |
| P 6056 Theseus | 1-7-61 | 20-3-62 | 15-8-63 |



Thetis (P 6052)

G. Gyssels, 1985



Triton (P 6055)

Marineamt, 5-84

D: 575 tons (658 fl) S: 23.5 kts Dim: 69.78 (65.5 pp) × 8.2 × 2.65

A: 2/40-mm AA (II × 1) — 1/Bofors 375-mm ASW RL (IV × 1) — 4/533-mm

ASW TT (I × 4) -2/d.c. racks (12/d.c.) - mines

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/TRS-N Sonar: ELAC 1BV — EW: . . . intercept

M: 2 M.A.N. V84V diesels; 2 props; 6,800 hp Electric: 540 kw Range: 2,760/15 Man: 5 officers, 43 men Fuel: 78 tons

Remarks: Former torpedo-recovery boats, well designed for operations in the Belts and the Baltic. Have H.S.A. Mk 9 torpedo f.c.s. and an optical lead-computing gun f.c.s. P 6054 has forward superstructure extended toward bow to accommodate a medical facility. Carry 20 ASW RL projectiles.

GUIDED-MISSILE PATROL BOATS

◆ 10 Type 143A Bldrs: A: Lürssen, Vegesack; B: Kröger, Rendsburg

| | | Laid down | L | In serv. | |
|----------------------|---|-----------|----------|----------|--|
| P 6121 S71 GEPARD | A | 11-7-79 | 25-9-81 | 7-12-82 | |
| P 6122 S72 Puma | A | 17-12-79 | 8-2-82 | 24-2-83 | |
| P 6123 S73 HERMELIN | В | 1-2-80 | 8-12-81 | 28-4-83 | |
| P 6124 S74 Nerz | A | 24-7-80 | 18-8-82 | 14-7-83 | |
| P 6125 S75 ZOBEL | В | 3-7-80 | 30-6-82 | 29-9-83 | |
| P 6126 S76 FRETTCHEN | A | 22-12-80 | 26-1-83 | 15-12-83 | |
| P 6127 S77 Dachs | В | 9-3-80 | 14-12-82 | 1-3-84 | |
| P 6128 S78 OZELOT | A | 25-6-81 | 7-6-83 | 3-5-84 | |
| P 6129 S79 Wiesel | A | 5-10-80 | 8-8-83 | 12-7-84 | |
| P 6130 S80 Hyäne | A | 7-12-81 | 5-10-83 | 13-11-84 | |

D: 300 tons (390.6 fl) S: 36 kts (32 fl)

Dim: 57.6 (54.4 pp) × 7.76 × 2.99 (2.56 hull)

A: 4/MM 38 Exocet-provision for 1/RAM ASMD (XXI × 1, RIM-116A

missiles) - 1/76-mm OTO Melara DP - mines

Electron Equipt: Radar: 1/3RM 20, 1/H.S.A. WM-27—EW: FL 1800 intercept, chaff



Dachs (P 6127)

G. Koop, 5-84



S 76 Frettchen (P 6126)

L. & L. Van Ginderen, 4-85

M: 4 MTU 16V956 SB80 diesels; 4 props; 16,000 hp Electric: 540 kw Fuel: 116 tons Range: 600/30; 2,600/16 Man: 4 officers, 18 p.o., 12 men

Remarks: Ordered 1978. A repeat Type 143 with the much-delayed RAM point-defense SAM system intended to replace the after 76-mm gun, and mine rails in place of the wire-guided torpedoes. Wood-planked hull on steel frame. Have AGIS integrated data system. Lack after optical GFCS found on Type 143/143B. Constitute the 7th Fast Patrol Boat Squadron. RAM to become operational circa 1987-88.

♦ 10 Type 143/143B Bldrs: A: Lürssen, Vegesack; B: Kröger, Rendsburg

| | Bldr | Laid down | L | In serv. |
|---------------------|------|-----------|----------|----------|
| P 6111 S61 ALBATROS | A | 4-5-72 | 22-10-73 | 1-11-76 |
| P 6112 S62 FALKE | A | 25-10-72 | 21-3-74 | 13-4-76 |
| P 6113 S63 GEIER | A | 14-2-73 | 18-9-74 | 2-6-76 |
| P 6114 S64 Bussard | A | 4-7-73 | 14-4-75 | 14-8-76 |
| P 6115 S65 Sperber | В | 18-1-73 | 15-1-74 | 27-9-76 |
| P 6116 S66 GRIEF | A | 12-12-73 | 4-9-75 | 25-11-76 |
| P 6117 S67 KONDOR | В | 19-6-73 | 6-3-75 | 17-12-76 |
| P 6118 S68 SEEADLER | A | 12-6-74 | 17-11-75 | 28-3-77 |
| P 6119 S69 Habicht | В | 25-1-74 | 5-6-75 | 23-12-77 |
| P 6120 S70 KORMORAN | A | 26-11-74 | 14-4-76 | 29-7-77 |
| | | | | |

D: 300 tons (393 fl) S: 36 kts (32 fl)

Dim: 57.6 (54.4 pp) × 7.76 × 2.82 (2.56 hull)

A: 4/MM 38 Exocet — 2/76-mm OTO Melara AA (I × 2) — 2/533-mm TT (aft-launching, for Seeal wire-guided torpedoes)

Electron Equipt: Radar: 1/3RM 20, 1/H.S.A. WM-27—EW: . . . intercept, chaff

M: 4 MTU 16V956 TB91 diesels; 4 props; 16,000 hp Electric: 540 kw Fuel: 116 tons Range: 600/30; 2,600/16 Man: 4 officers, 18 p.o., 12 men

Remarks: Wood-planked hull on steel frame. To be refitted to Type 143A standard, except that the torpedo tubes will be retained, thus becoming Type 143B. There is a secondary OGR-7/3 optical f.c.s. for the aft 76-mm gun. PG 119 carried a mockup RAM launcher aft during 1983. EW equipment is less elaborate than on the Type 143A; both classes have a chaff-dispensing mast abaft the mainmast central leg.



S 67 Kondor (P 6117)

L. & L. Van Ginderen, 5-85

GUIDED-MISSILE PATROL BOATS (continued)



S 66 Grief (P 6116)

L. & L. Van Ginderen, 5-85

◆ 20 Type 148, steel-hulled Bldrs: A: Constructions Mécaniques de Normandie, Cherbourg; B: Lürssen, Vegesack

| | Bldr | Laid down | L | In serv. |
|--------------------|------|-----------|----------|----------|
| P 6141 S41 Tiger | A | 11-10-71 | 27-9-72 | 30-10-72 |
| P 6142 S42 ILTIS | A | 2-2-72 | 12-12-72 | 8-1-73 |
| P 6143 S43 Luchs | A | 23-3-72 | 7-3-73 | 9-4-73 |
| P 6144 S44 MARDER | A | 15-4-72 | 5-5-73 | 14-7-73 |
| P 6145 S45 LEOPARD | A | 13-9-72 | 3-7-73 | 21-8-73 |
| P 6146 S46 Fuchs | В | 10-3-72 | 21-5-73 | 17-10-73 |
| P 6147 S47 JAGUAR | A | 29-11-72 | 20-9-73 | 13-11-73 |
| P 6148 S48 Löwe | В | 10-7-72 | 10-9-73 | 9-1-74 |
| P 6149 S49 WOLF | A | 23-1-73 | 11-1-74 | 26-2-74 |
| P 6150 S50 Panther | В | 30-9-72 | 10-12-73 | 27-3-74 |
| P 6151 S51 HÄHER | A | 5-4-73 | 26-4-74 | 12-6-74 |
| P 6152 S52 STORCH | В | 12-3-73 | 25-3-74 | 17-7-74 |
| P 6153 S53 PELIKAN | A | 11-9-73 | 4-7-74 | 24-9-74 |
| P 6154 S54 ELSTER | В | 29-6-73 | 8-7-74 | 14-11-74 |
| P 6155 S55 ALK | A | 9-4-74 | 15-11-74 | 7-1-75 |
| P 6156 S56 DOMMEL | В | 13-12-73 | 30-10-74 | 12-2-75 |
| P 6157 S57 WEIHE | A | 2-7-74 | 13-2-75 | 3-4-75 |
| P 6158 S58 PINGUIN | В | 11-3-74 | 26-2-75 | 22-5-75 |
| P 6159 S59 REIHER | A | 8-11-74 | 15-5-75 | 24-6-75 |
| P 6160 S60 Kranich | В | 9-5-74 | 26-5-75 | 6-8-75 |

D: 234 tons (264 fl) S: 35.8 kts Dim: 47.0 (45.9 pp) × 7.1 × 2.66 (fl)

A: 4/MM 38 Exocet — 1/76-mm DP OTO Melara (fwd) — 1/40-mm Bofors AA (aft) — 8 mines in place of the 40-mm AA

Electron Equipt: Radar: 1/3RM 20 navigation, 1/Triton, 1/Pollux M: 4 MTU MD 872 16-cyl. diesels; 4 props; 14,400 hp (12,000 sust.)

Electric: 270 kw Range: 570/30; 1,600/15 Fuel: 39 tons

Man: 4 officers, 15 p.o., 18 men

Remarks: All hulls fitted out at Cherbourg. Ordered 18-12-70, as CMN's type Combattante II A4L. Steel construction. Thomson-CSF Vega fire-control system with Pollux radar; Triton is used for target designation. P 6152 has Triton II search radar and Castor II fire-control radar, the latter with a Piranha optronic attachment. Another ship conducted trials with the CSEE Naja optronic and CSEE Panda optical directors during the 1982-83. All have the Palis (Passive-Active-Link) system for data sharing and can use NATO LINK 11. P 6159 has an enclosed Mauser 40-mm gun mounting.



S 56 Dommel (P 6156)

P. Voss, 9-84



S 52 Storch (P 6152) - with new radars

L. & L. Van Ginderen, 6-83

Note: The 10 Zobel (Type 142)-class torpedo boats have been disposed of: Zobel (P 6092) on 7-9-82; Hermelin (P 6095) on 12-1-83; Nerz (P 6096) on 8-7-82; Puma (P 6097) on 17-12-81; Gerpard (P 6098) on 9-11-82; Dachs (P 6094) on 2-12-83; Frettchen (P 6100) on 9-8-83; Ozelot (P 6101) on 10-1-84; Wiesel (P 6093) on 6-4-84; and Hyäne (P 6099) on 5-6-84. P 6093, 6101, 6099 to Turkey on 8-10-84, and 6098, 6094, and 6100 on 14-5-84. P 6092 sold to builders, Lürssenwerft 28-12-83; P 6096 used for Type 343 minesweeper equipment trials; P 6095 is to be used as a missile target, and P 6097 is a static training hulk at the Naval Technical School.

MINE WARFARE SHIPS

♦ 0 (+12) Type 355 pressure-mine sweepers

Remarks: Remains a project to design a ship capable of detecting and disposing of the "unsweepable" pressured mine. If successful, may be build during 1990s.

♦ 0 (+10 + 10) Type 332 coastal minehunters Bldr: . . .

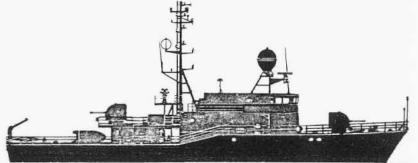
0 (+10) Type 343 minesweepers Bldr: 4 by Lürssen, Vegesack; 3 by Abeking & Rasmussen, Lemwerde; 3 by Krögerwerft, Rendsburg (In serv. 1988-90)

| | Bldr | Laid down | L | In serv. |
|-----|------|-----------|---|----------|
| M N | | | | 1988 |
| M N | | | | |
| M N | | | | |
| M N | | | | * * * |
| M N | | | | |
| M N | | | | |
| M N | | | | |
| M N | | | | |
| M N | | | | |
| M N | | | | 1990 |



Type 343 minesweeper - artist's impression

1984



Type 343 class

MINE WARFARE SHIPS (continued)

D: 570-590 tons (fl) S: 21 kts Dim: 54.0 (51.0 pp) \times 9.2 \times 2.5 A: 2/40-mm AA (I \times 2) — mines

Electron Equipt: Radar: 1/nav., 1/H.S.A. WM 27/28

Sonar: DSQS-11

EW: intercept array, 1 decoy RL, 2 infrared decoy projectors

M: 2 MTU diesels; 2 CP props; . . . hp Electric: 3 generators/. . . kw

Range: . . . /. . . Man: 37 tot.

Remarks: Messerschmidt-Bölkow-Blohm (MBB) was selected as prime contractor 10-1-85, with initial orders for the 10 Type 343 non-magnetic steel-hulled minehunter/minesweepers expected spring 1985. Characteristics not fully determined. The Type 343s will be configured for mechanical, acoustic, and magnetic minesweeping to replace Type 340/341 (Schütze)-class patrol minesweepers. The later two series of Type 332-class minehunters will be very similar, except for carrying remote-controlled minehunting submersibles; initial orders were to come in 1987, and the final 10 Type 332 may have controls for "Toika"-type drones. May carry RAM launcher in place of aft 40-mm AA.

• 6 Type 351 drone minesweeper-control ships

Bldr: Burmester, Bremen

| | L | In serv. | Conversion completed |
|------------------|----------|----------|----------------------|
| M 1073 Schleswig | 2-10-57 | 30-10-58 | 19-3-81 |
| M 1076 Paderborn | 5-12-57 | 16-12-58 | 17-9-81 |
| M 1079 DÜREN | 12-6-58 | 22-4-59 | 7-11-83 |
| M 1081 Konstanz | 30-9-58 | 23-7-59 | 24-5-82 |
| M 1082 Wolfsburg | 10-12-58 | 8-10-59 | 4-3-82 |
| M 1083 Ulm | 10-2-59 | 7-11-59 | 11-11-81 |



Schleswig (M 1073)

L. & L. Van Ginderen, 8-85

D: 488 tons (fl) S: 16.5 kts Dim: $47.5 \times 8.5 \times 2.75$ A: 1/40-mm AA Electron Equipt: Radar: 1/TRS-N—Sonar: DSQS-11A M: 2 MD 871 UM/1D diesels; 2 CP props; 3,300 hp Range: 2,200/16

Remarks: Type 320 minesweepers, each converted to control three F-1 "Troika" drone magnetic/acoustic/mechanical minesweepers. Also carry and tow an Oropesa sweep rig and stow numerous channel-marking ("Dan") buoys.

♦ 18 Type HL 351 "Troika" drones Bldr: MAK, Kiel

| | In serv. | | To some | | ¥ |
|-----------|----------|------------|----------|------------|----------|
| | | | In serv. | | In serv. |
| SEEHUND 1 | 1-8-80 | SEEHUND 7 | 17-9-81 | Seehund 13 | 1-9-82 |
| SEEHUND 2 | 1-8-80 | SEEHUND 8 | 17-9-81 | SEEHUND 14 | 1-9-82 |
| SEEHUND 3 | 1-8-80 | SEEHUND 9 | 17-9-81 | SEEHUND 15 | 1-9-82 |
| SEEHUND 4 | 17-7-81 | SEEHUND 10 | 11-11-81 | SEEHUND 16 | 13-5-82 |
| SEEHUND 5 | 17-7-81 | SEEHUND 11 | 11-11-81 | SEEHUND 17 | 13-5-82 |
| SEEHUND 6 | 17-7-81 | SEEHUND 12 | 11-11-81 | SEEHUND 18 | 13-5-82 |



Seehund 5

G. Gyssels, 8-84

D: 91 tons (96.5 fl) S: 9.4 kts Dim: 24.92 × 4.46 × 1.8 A: None M: 1 MWM TRHS 518A diesel; Schöttel prop; 445 hp Electric: 208 kw Range: 520/8.8 Man: 3 tot.

Remarks: Ordered 1977, to operate three-apiece with the Type-351 control ships. Essentially remote-controlled, self-propelled magnetic minesweeping solenoids with all machinery highly shock-protected. Also able to carry two Type SDG-21 Oropesa mechanical minesweeping gear. Dates given are completions; were originally commissioned in groups of three on same date as Type 351 control ships were recommissioned (see above).

• 3 HFG F-1 "Troika" trials craft

Bldr: Ottenser Eisenwerke, Hamburg

Seekuh 1 (L: . . .) Seekuh 2 (L: 24-3-66) Seekuh 3 (L: 24-3-66)



"Seekuh" trials craft

1977

D: 104 tons (181 ft) S: . . . kts Dim: 27.0 × 3.53 × 2.30 hull/3.01 max.

M: 2 MWM 8-cyl. diesels, electric drive; 1 Schöttel prop/rudder; 700 hp Electric: 176 kw Man: 3 tot.

Remarks: Prototypes for "Troika" concept involved in an extraordinarily protracted trial period. Seekuh 1 (ex-Y 1677) is 23.8 m o.a., 90 tons, 290 hp. Earlier concept trials craft Walross (Y 1676) now stricken. All worked with small minesweeper Niobe.

12 Type 331 A* and 331 B minehunters

Bldr: Burmester, Bremen

| | L | In serv. | | L | In serv. |
|------------------|---------|----------|-------------------|----------|----------|
| M 1070 GÖTTINGEN | 1-4-57 | 31-5-58 | M 1078 CUXHAVEN | 11-3-58 | 11-3-59 |
| M 1071 KOBLENZ | 6-5-57 | 8-7-58 | M 1080 Marburg | 4-8-58 | 11-6-59 |
| M 1072 LINDAU | 16-2-57 | 24-4-58 | M 1084 Flensburg* | 7-4-59 | 3-12-59 |
| M 1074 TÜBINGEN | 12-8-57 | 25-9-58 | M 1085 MINDEN | 9-6-59 | 22-1-60 |
| M 1075 Wetzlar | 24-6-57 | 20-8-58 | M 1086 Fulda* | 19-8-59 | 5-3-60 |
| M 1077 WEILHEIM | 4-2-59 | 28-1-59 | M 1087 VÖLKLINGEN | 20-10-59 | 21-5-60 |



Flensburg (M 1084) - Type 331A, with Kelvin-Hughes radar - note auxiliary propulsors raised at stern G. Gyssels, 7-84



Weilheim (M 1077) - Type 331B, with TRS-N radar

G. Gyssels, 1-85

D: 388 tons (402 fl) S: 17 kts Dim: 47.45 × 8.5 × 3.68 (sonar down) A: 1/40-mm AA

Electron Equipt: Radar: 1/TRS-N or Kelvin-Hughes 14/9

Sonar: DSQS-11 (Type 331A: Plessey 193M Mk 20G)

M: 2 Maybach diesels; 2 CP props; 3,340 hp Electric: 220 kw Range: 1,400/16; 3,950/9 Man: 46 tot.

Remarks: All are conversions from the Type 320, Lindau-class, wooden-hulled minesweepers. The Type 331As were converted 1968-72, the Type 331Bs in 1975-79. None

MINE WARFARE SHIPS (continued)

have mechanical sweep gear. Minehunting speed is 6 kts, on two 50-kw electric motors. Six divers and 2 French PAP-104 remote-controlled minehunting devices are carried.

* 21 Type 340 and Type 341 patrol minesweepers Bldr: Abeking & Rasmussen, Lemwerde (except: Schürenstedt, Bardenfleth: M 1064, 1065, 1092, 1094; Schlichting, Travemünde: M 1067, 1090, 1095)

| Type 340 | L | In serv. | | L | In serv. |
|-----------------|----------|----------|-----------------|----------|----------|
| M 1051 CASTOR | 12-7-62 | 11-12-62 | M 1064 DENEB | 11-9-61 | 7-12-61 |
| M 1054 POLLUX | 15-9-60 | 28-4-61 | M 1065 JUPITER | 15-2-61 | 30-5-61 |
| M 1055 Sirius | 15-3-61 | 5-10-61 | M 1067 ATAIR | 20-4-61 | 27-9-61 |
| M 1056 RIGEL | 2-4-62 | 19-9-62 | M 1069 WEGA | 10-10-62 | 8-4-63 |
| M 1057 Regulus | 18-12-61 | 20-6-62 | M 1090 Perseus | 22-9-60 | 16-3-61 |
| M 1058 Mars | 1-12-60 | 18-7-61 | M 1092 Pluto | 9-8-60 | 19-12-60 |
| M 1059 SPICA | 25-5-60 | 10-5-61 | M 1093 NEPTUN | 9-6-60 | 29-9-60 |
| M 1060 SKORPION | 21-5-63 | 9-10-63 | M 1094 WIDDER | 12-3-59 | 26-9-60 |
| Type 341 | | | M 1095 HERKULES | 25-8-60 | 9-12-60 |
| M 1062 SCHÜTZE | 20-5-58 | 14-4-59 | M 1096 FISCHE | 14-7-59 | 12-1-60 |
| M 1063 WAAGE | 9-4-59 | 19-3-62 | М 1097 СЕММА | 6-10-59 | 5-7-60 |
| | | | | | |



Skorpion (M 1060) - Type 340

G. Gyssels, 8-83



Perseus (M 1090) - Type 341

G. Gyssels, 9-84

D: 241 tons (280 fl) S: 24.6 kts Dim: 47.44 × 7.2 (6.96 wl) × 2.4
 A: 1/40-mm AA (see Remarks) Electron Equipt: Radar: 1/TRS-N
 M: Maybach or Mercedes-Benz diesels; 2 Escher-Wyss cycloidal props; 4,000/4,200 hp

Electric: 120 kw plus 340-kw sweep generator Fuel: 22 tons Range: 640/22; 1,000/18 Man: 39 tot.

Remarks: Multi-purpose ships that can be employed as minesweepers, coastal patrol craft (2/40-mm AA), and minelayers (2 mine rails), the minesweeping gear to be removed in the latter two instances. Have appeared only in the minesweeper configuration for many years. Stier (former M 1061), used as a submarine-rescue ship, has been given a new hull number and disarmed; decompression chamber in new stern deckhouse. Eight with Mercedes-Benz diesels are Type 340; the remainder, with Maybach diesels, are Type 341. Sisters Capella (ex-M 1098), Krebs (ex-M 1052), Orion (ex-M 1053), Steinback (ex-M 1091), and Uranus (ex-M 1099) have been operated by the Deutscher Marinebund youth organization since the mid-1970s; Algol (ex-M 1068) is used by the naval damage control school, and Mira (ex-M 1050), formerly used by the Naval Technical School, was sold for scrap in 1984.

◆ 10 Type 394 inshore minesweepers Bldr: Krögerwerft, Rendsburg

| | L | In serv. | | L | In serv. |
|------------------|---------|----------|-----------------|----------|----------|
| M 2658 Frauenlob | 26-2-65 | 27-9-66 | M 2663 MINERVA | 25-8-66 | 16-6-67 |
| M 2659 NAUTILUS | 19-5-65 | 26-10-66 | M 2664 DIANA | 13-12-66 | 21-9-67 |
| M 2660 GERION | 19-6-65 | 17-2-67 | M 2665 Loreley | 14-3-67 | 29-3-68 |
| M 2661 MEDUSA | 25-1-66 | 17-2-67 | M 2666 ATLANTIS | 20-6-67 | 29-3-68 |
| M 2662 Undine | 16-5-66 | 20-3-67 | M 2667 ACHERON | 11-10-67 | 10-2-68 |

D: 238 tons (246 fl) **S:** 14.3 kts **Dim:** $38.01 \times 8.03 \times 2.1$

A: 1/40-mm AA

Electron Equipt: Radar: 1/TRS-N

M: 2 Mercedes-Benz MB 820 Db diesels; 2 props; 2,000 hp Electric: 554 kw Fuel: 30 tons Range: 648/14; 1,770/7

Man: 4 officers, 20 men

Remarks: Wooden construction. Differ from Type 393 in having a 260-kw diesel sweep current generator. Formerly had "Y,"- and earlier "W,"-series pendants.



Undine (M 2662)

M. Louagie, 6-84

| • 8 Type 393 in | shore min | esweepers | Bldr: Krögerwer | ft, Rendsbu | rg |
|-----------------|-----------|-----------|-----------------|-------------|----------|
| | L | In serv. | | L | In serv. |
| M 2650 ARIADNE | 23-4-60 | 23-10-61 | М 2654 NYMPHE | 20-9-62 | 8-5-63 |
| M 2651 Freya | 25-6-60 | 6-1-62 | M 2655 Nixe | 3-12-62 | 20-6-63 |
| M 2652 VINETA | 17-9-60 | 9-4-62 | M 2656 AMAZONE | 27-2-63 | 4-9-63 |
| M 2653 HERTA | 18-2-61 | 7-6-62 | M 2657 GAZELLE | 14-8-63 | 9-12-63 |



Nixe (M 2655)

L. & L. Van Ginderen, 5-83

D: 199-205 tons light (252 fl) S: 14.3 kts Dim: 38.01 × 8.03 × 1.99

A: 1/40-mm AA Electron Equipt: Radar: 1/TRS-N

M: 2 Mercedes-Benz MB 820 Db diesels; 2 props; 2,000 hp Electric: 554 kw

Fuel: 30 tons Range: 830/12 Man: 4 officers, 20 men

Remarks: Similar to Type 394, but have a 260-kw gas turbine sweep current generator.

AMPHIBIOUS WARFARE CRAFT

◆ 22 Type 520 utility landing craft (launch dates in parentheses) Bldr: Howaldtswerke, Hamburg, 1965-66

| L 760 Flunder (6-1-66) | L 767 TÜMMLER (14-6-66) | L 792 Dorsch (17-3-66) |
|------------------------|--------------------------|-------------------------|
| L 761 KARPFEN (5-1-66) | L 768 Wels (15-6-66) | L 793 Felchen (19-4-66) |
| L 762 Lachs (17-2-66) | L 769 ZANDER (13-7-66) | L 794 Forelle (20-4-66) |
| L 763 Plötze (16-2-66) | L 788 Butt (28-3-65) | L 795 INGER (14-7-66) |
| L 764 ROCHEN (18-3-66) | L 789 Brasse (28-3-65) | L 796 Makrele (22-8-66) |
| L 765 SCHLEI (17-5-66) | L 790 Barbe (26-11-65) | L 797 MÜRÄNE (23-8-66) |
| L 766 Stör (18-5-66) | L 791 Delphin (25-11-65) | L 798 Renke (22-9-66) |
| | | L 799 Salm (23-9-66) |



Barbe (L 790)

L. & L. Van Ginderen, 6-85

AMPHIBIOUS WARFARE CRAFT (continued)

D: 166 tons (403 fl) S: 11 kts Dim: 40.04 (36.7 pp) × 8.8 × 1.6 (2.1 max.)

A: 2/20-mm Rheinmetall Rh 202 AA (II × 1) Range: 1,200/11

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 2 MWM 12-cyl. diesels; 2 props; 1,200 hp Electric: 130 kVA

Man: 17 tot.

Remarks: Design based on the American LCU 1646 class. Renke (L 798) and Salm (L 799) in reserve; Inger (L 795) used for reserve training. Cargo: 237 tons max.; 141.6 normal.

 21 Type 521 landing craft Bldr: Rheinwerft, Walsum (LCM 1, 2: Blohm + Voss, Hamburg) (In serv. 1964-67)

LCM 1-16; LCM 18-20; LCM 27; LCM 28



LCM 16

L. & L. Van Ginderen, 10-83

D: 116 tons (168 fl)
 S: 10.6 kts
 Dim: 23.56 × 6.40 × 1.46
 M: 2 MWM 8-cyl. diesels; 2 props; 684 hp
 Range: 690/10; 1,430/7
 Man: 7 tot.

REMARKS: Design based on U.S. LCM (8). LCM 1 to LCM 8 are in reserve. LCM 11-20 have a 20-kw diesel generator and a 2-ton cargo boom; they can be used to carry up to 18 torpedoes. Cargo: 60 tons or 50 troops. During 1981, six were reclassified as auxiliaries; LCM 21 as A 1423, and LCM 22-26 as A 1430-A 1434.

AUXILIARY SHIPS

HYDROGRAPHIC SURVEY SHIP

♦ 1 Type 750 Bldr: J. R. Köser Norderwerft, Hamburg

Laid down L In serv. A 1452 Planet (ex-Y 843) 30-4-64 23-9-65 15-4-67



Planet - pendant A 1452 not painted on

G. Koop, 1977

D: 1,513 tons (1,917 fl) S: 13.9 kts Dim: 80.43 (74.0 pp) × 12.60 × 3.97 M: 4 MWM 12-cyl., 850-hp diesels, electric drive; 1 prop; 1,390 hp Electric: 650 kw Range: 9,300/13.4 Man: 39 crew plus 13 scientists

Remarks: Operated for the Ministry of Communications by a civilian crew. Hangar for one helicopter. Capable of conducting geophysical, meteorological, biological, chemistry, and hydrographic research. Denny-Brown stabilizers, 125-hp Pleuger active rudder and bow-thruster fitted. Main engines provide 560 kw of the electrical power. Painted white, with buff stack and mast.

SUPPORT TENDERS

♦ 10 Rhein-class Types 401, 402, and 403

(a) Type 401, for missile boats

| | Bldr | L | In serv. |
|------------|---------------------|----------|----------|
| A 58 RHEIN | Schlieker, Hamburg | 10-12-59 | 6-11-61 |
| A 61 Elbe | Schlieker, Hamburg | 5-5-60 | 17-4-62 |
| A 63 Main | Lindenauwerft, Kiel | 23-7-60 | 29-6-63 |

| A 66 NECKAR | Lürssen, Vegesack | 26-6-61 | 7-12-63 |
|------------------|-------------------------------|----------|---------|
| A 68 WERRA | Lindenauwerft, Kiel | 26-3-63 | 2-9-64 |
| A 69 Donau | Schlichting, Travemunde | 26-11-60 | 23-5-64 |
| (b) Type 402, f | or mine-countermeasures ships | | |
| A 65 SAAR | Norderwerft, Hamburg | 11-3-61 | 11-5-63 |
| A 67 Mosel | Schlieker, Hamburg | 15-12-60 | 8-6-63 |
| (c) Type 403, fe | or submarines | | |
| A 55 Lahn | Flenderwerke, Lübeck | 21-11-61 | 24-3-64 |
| A 56 Lech | Flenderwerke, Lübeck | 4-5-62 | 8-12-64 |
| | I retitue or me, in more | | 0 0. |



Elbe (A 61) - Type 401 small combatant tender

L. & L. Van Ginderen, 4-85



Lahn (A 55) — Type 403 submarine tender

S. Terzibaschitsch, 6-84



Saar (A 65) - Type 402 minecraft tender

L. & L. Van Ginderen, 6-85

D: (a): 2,370 tons (3,000 fl); (b): 2,330 tons (3,000 fl); (c) 2,400 tons (2,956 fl)

S: 20 kts (trials, 22) Dim: 98.2 × 11.83 × 5.20

A: 2/100-mm AA (I × 2) (not in A 55, A 56) —4/40-mm AA (I × 4, except II × 2 in A 55 and A 56) — mines

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/SGR-105, 1/SGR-103, 2/Mk 45 fire control; A 55 and A 56: 14/9 and SGR-103 only

M: 6 Maybach diesels (Mercedes-Benz 839Db in A 54-56, 65, 67); 2 props; 11,400 hp Electric: 2,250 kw Fuel: 334 tons Range: 2,500/16

Man: 98 tot. (space for 40 officers, 40 petty officers, 130 nonrated men)

Remarks: Slight variations in length: Type 402 are 98.5 m o.a., Type 403 are 98.6 m o.a. Type 401 have one crane to port, Type 402 have two side by side farther aft. A 54, A 55, A 56, A 65, A 67 have electric drive; the others have diesel-reduction drive, CP props. Tenders carry 200 tons of fuel oil, 40 reserve torpedoes; A 55, A 56, and A 58 have an additional 200 tons of stores; A 66, A 68, and A 69 can be used as training ships. Weser (A 62) and Ruhr (A 64) transferred to the Greek and Turkish navies in 1975 and 1976, respectively. Isar (A 54), long in reserve, was transferred to Turkey 30-9-82 and delivered under tow. Two of the combatant-tender version are to be re-equipped to support the new Type-143A missile boats as Type-401D tenders. Type 401 and 402 have two M4 radar GFCS. The Type 401 and 402 units are scheduled to receive the RAM point-defense missile system.

UNDERWAY REPLENISHMENT SHIPS

Note: These ships are grouped together here because, despite their dissimilar functions, they are variations on the same basic design.

* 8 Type 701A, Type 701C, and 701E supply ships

| (a) Type 701A | Bldr | Laid down | L | In serv. |
|----------------------------------|-----------------------|-----------|----------|----------|
| A 1411 LÜNEBURG | Flensburger SY | 8-7-64 | 3-5-65 | 31-1-66 |
| A 1416 NIENBURG | Flensburger SY | 16-11-65 | 28-7-66 | 1-8-68 |
| A 1417 OFFENBURG | Blohm + Voss, Hamburg | 1966 | 10-9-66 | 27-5-68 |
| (b) Type 701C | | | | |
| A 1412 COBURG | Flensburger SY | 9-4-65 | 15-12-65 | 9-7-68 |
| A 1414 GLÜCKSBURG | Flensburger SY | 18-8-65 | 3-5-66 | 9-7-68 |
| A 1415 SAARBURG | Blohm + Voss, Hamburg | 1-3-66 | 15-7-66 | 30-7-58 |
| A 1418 MEERSBURG | Flensburger SY | 5-8-65 | 22-3-66 | 25-6-68 |
| (c) Type 701E A 1413 FREIBURG | Blohm + Voss, Hamburg | 1965 | 15-4-66 | 27-5-68 |



Lüneburg (A 1411) - Type 701A

P. Voss, 10-84



Meersburg (A 1418) - Type 701C

L. & L. Van Ginderen, 6-83



Freiburg (A 1413) - Type 701E - note helo deck

P. Voss, 9-84

D: Type 701A: 1,896 tons light (3,483 fl); Type 701C: 3,709 tons (fl); Type 701E: 3,900 tons (fl) S: 17 kts

Dim: $104.15 (98.00 \text{ pp}) \times 13.2 \times 4.2$ (Type 701C: 114.9 overall; Type 701E: 118.3 overall)

A: 4/40-mm AA (II × 2) in preservation (fwd. mount active in A 1415)

Remarks: Originally configured to carry more than 1,100 tons of cargo, including 640 tons fuel, 205 tons ammunition, 100 tons spare parts (10,000 separate items), and 131 tons fresh water, plus 267m³ refrigerated stores. A 1415 lengthened 11.5 meters in 1974-75 to carry spare Exocet missiles and other supplies for the new Type-143 and Type-148 classes; stowage for spare parts increased to 30,000 items, with inventory management by the Nixdorf computer system. A 1412, A 1414, A 1418 also converted to Type 702C standard, 1975-77. A 1413, converted 1981-84 to support Type-122 frigates, is equipped with helicopter facilities to permit vertical replenishment, 9 spare Harpoon missiles and repair facilities for Mk 88 Lynx helicopters. A 1412 has a bow-thruster. All are equipped with fin stabilizers, one 3-ton and two 2-ton cranes.

| * 2 Type 760 | ammunition | ships |
|--------------|------------|-------|
|--------------|------------|-------|

| Bldr: Orenstein | & | Koppel, | Lübeck |
|-----------------|---|---------|--------|
|-----------------|---|---------|--------|

| | Laid down | L | In serv. |
|-------------------|-----------|---------|----------|
| A 1435 Westerwald | 3-11-65 | 25-2-66 | 11-2-67 |
| A 1436 ODENWALD | 3-11-65 | 5-5-66 | 23-3-67 |



Odenwald (A 1436)

L. & L. Van Ginderen, 10-82

D: 3,460 tons (4,014 fl) S: 17 kts Dim: 105.3 × 14.0 × 4.6

A: 4/40-mm AA (II × 2) in preservation

M: 2 Maybach MD 872 diesels; 2 CP props; 5,600 hp Electric: 1,285 kw Range: 3,500/17 Man: 60 tot. (A 1436: 45 tot.)

Remarks: Similar to Type 701, but carry only ammunition. A 1436 had the forward 40-mm AA mount removed 1981. Cargo: 1,080 tons.

♦ 2 Type 762 mine-supply ships Bldr: Blohm + Voss, Hamburg

Laid down L In serv.
A 1437 Sachsenwald 1-8-66 10-12-66 20-8-69
A 1438 Steigerwald 9-5-66 10-3-67 20-8-69



Steigerwald (A 1438)

M. Louagie, 6-84

D: 2,962 tons (3,380 fl) S: 17 kts Dim: 110.7 × 13.9 × 3.79

A: 4/40-mm AA (II × 2) - mines

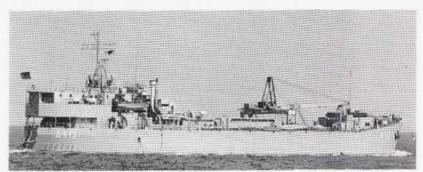
M: 2 Maybach MD 872 diesels; 2 CP props; 5,600 hp Electric: 1,300 kw Range: 3,500/17 Man: 65 tot.

Remarks: The designation "supply ships" is something of a euphemism, since these ships have four mine ports at the stern and are actually minelayers, capable of carrying 668 to 1,048 mines, depending on type. Construction of a torpedo-transport version was canceled.

REPAIR SHIPS

• 2 Type 726, former U.S. Aristaeus class

Bldr L In serv.
A 512 Odin (ex-*Ulysses*, ARB 9) Bethlehem, Hingham 2-12-44 27-12-44
A 513 Wotan (ex-*Diomedes*, ARB 11) Chicago Bridge & Iron 11-11-44 23-1-45



Wotan (A 513)

P. Voss, 9-83

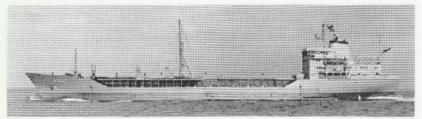
D: 3,435 tons (3,455 fl) S: 11 kts Dim: 101.0 × 15.28 × 2.80 M: 2 G.M. 12-278A (A 513: 12-567A) diesels; 2 props; 1,800 hp Fuel: 438 tons Range: 13,200/11 Man: 143 tot. (civilian personnel)

Remarks: Modified former LST 967 and LST 1119, respectively, transferred in 6-61. A 10-ton traveling crane moves on rails between the bridge and the forward sheer. Have accommodations for 187.

REPLENISHMENT OILERS

♦ 2 Type 704 former merchant tankers

In serv. Kröger, Rendsburg 23-8-74 5-9-77 A 1443 RHÖN (ex-Okene) Kröger, Rendsburg 13-2-75 23-9-77 A 1442 Spessart (ex-Okapi)



Spessart (A 1442)

L. & L. Van Ginderen, 3-85

D: 14,260 tons (fl); 6,209 grt/10,950 dwt **S:** 16 kts **Dim:** $130.2 \times 19.3 \times 8.20$ M: 1 MAK 12-cyl. diesel; CP prop; 8,000 hp Electric: 2,000 kw Man: 42 tot.

Remarks: 6,200 grt. Converted while building. Purchased from Bulk Acid Carriers, Monrovia, in 1976. Fitted with one underway-replenishment station per side. Cargo: 9,500 m³ distillate fuel, 1,650 m³ fuel oil, 400 m³ water. Replenishment facilities are to be upgraded.

| • 4 Type 703 H | ldr: Lindenauwerft, Kiel |
|----------------|--------------------------|
|----------------|--------------------------|

| | Laid down | L | In serv. |
|-------------------|-----------|----------|----------|
| A 1424 WALCHENSEE | 12-10-64 | 10-7-65 | 29-6-66 |
| A 1425 Ammersee | 28-3-66 | 9-7-66 | 2-3-67 |
| A 1426 Tegernsee | 21-4-66 | 22-10-66 | 23-3-67 |
| A 1427 WESTENSEE | 28-10-66 | 8-4-67 | 6-10-67 |



Tegernsee (A 1426)

P. Voss, 8-84

D: 2,174 tons (ff) **S:** 12.5 kts **Dim:** $71.9 \times 11.2 \times 4.28$ **M:** 2 MWM 12-cyl. diesels; 1 CP prop; 1,200 hp **Electric:** 635 kw Cargo capacity: 1,130 m3 Range: 3,250/12 Man: 21 tot.

♦ 1 Type 763 former merchant tanker

Bldr: Lindenauwerft, Kiel

Laid down L In serv. 23-9-58 A 1407 WITTENSEE (ex-Sioux) 15-2-58 5-12-58



Wittensee (A 1407)

1975

D: 1,237 tons (1,854 fl) S: 12 kts Dim: 67.45 × 9.84 × 4.25 M: 1 MAK 6-cyl. diesel; 1,250 hp Electric: 216 kw Cargo: 1,238 tons Range: 6,240/12 Man: 21 tot. (civilian crew) Cargo capacity: 1,250 m3

Remarks: Purchased 26-3-59. Sister Bodensee transferred to Turkey 8-77. 998 grt.

♦ 1 Type 766 former merchant tanker Bldr: Norderwerft, Hamburg

Laid down L In serv. A 1429 EIFEL (ex-Friedrich Jung) 5-11-57 2-4-58 26-7-58

D: 6,720 tons (fl) S: 13 kts Dim: 101.76 × 14.43 × 7.1 M: 2 M.A.N. 8-cyl. diesels; 1 prop; 3,360 hp Electric: 760 kVA Cargo: 6,500 m3 Range: 7,300/12 Man: 40 tot.

Remarks: 3,444 grt. Purchased and commissioned 27-5-63. Equipped for underway replenishment. One fueling station per side, plus over-the-stern capability.



Eifel (A 1429)

P. Voss, 9-82

1 Type 766 former merchant tanker

Bldr: Norderwerft, Hamburg

Laid down

L In serv. 2-9-53 26-11-53

A 1428 HARZ (ex-Claere Jung) 31-3-53

Harz (A 1428)

L. & L. Van Ginderen, 5-83

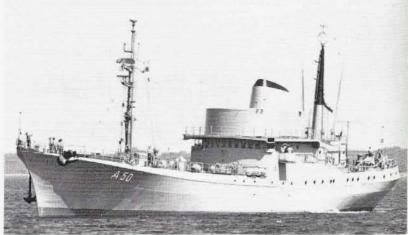
D: 5,380 tons (fl) S: 12 kts Dim: 92.40 × 13.60 × 6.70 M: 2 OEW 8-cyl. diesels; 1 prop; 2,520 hp Electric: 380 kVA Cargo: 5,000 m³ Range: 7,200/11 Man: 28 tot.

Remarks: 2,800 grt. Purchased and commissioned 27-5-63. Equipped for underway replenishment, one station per side.

INTELLIGENCE COLLECTORS

 2 Type-442B converted trawlers Bldr: Unterweser, Bremerhaven

Conv. In serv. 21-11-60 19-10-71 21-3-61 A 50 Alster (ex-Mellum) A 53 OKER (ex-Hoheweg) 29-8-60 19-10-60 11-2-72



Alster (A 50)

sen, Lemwerde

L. & L. Van Ginderen, 8-82

D: 1,187 tons (1,497 fl) S: 15 kts Dim: 72.83 (68.35 pp) × 10.50 × 5.60 M: 1 Klöckner-Humboldt-Deutz 8-cyl., 1,800-hp diesel, electric drive; 1 KHD 8-cyl. auxiliary propulsion diesel, 400-hp electric drive; 1 prop

REMARKS: Two Type-423 replacements planned, with a third ship to be built in the 1990s; will be of about 300 tons, with a crew of 40.

◆ 1 Type-740 converted inshore minesweeper Bldr: Abeking & Rasmus-

Laid down In serv. Y 836 HOLNIS 31-3-66 15-8-64 20-5-65

D: 150 tons (180 fl) S: 16.5 kts Dim: 36.87 × 7.40 × 1.80 M: 2 Mercedes-Benz MB 820Db diesels; 2 props; 2,000 hp Electric: 380 kw Fuel: 13 tons Man: 27 tot.

INTELLIGENCE COLLECTORS (continued)



Holnis (Y 836)

L. & L. Van Ginderen, 1980

Remarks: Wooden construction, prototype of a class of 20 Type-390 inshore minesweepers, the other 19 of which were canceled. Altered circa 1968 as an intelligence collector.

♦ 1 Type-422A converted tug Bldr: Akers Mek., Oslo

A 52 OSTE (ex-USN Puddefjord, ex-Ger. Puddefjord)

L In serv.
21-10-42 1943



Oste (A 52)

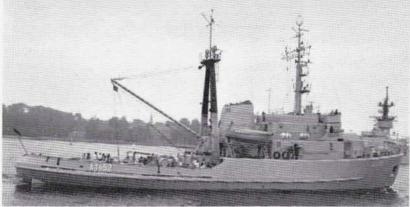
G. Koop, 1978

D: 690 tons (940 fl)
 S: 11 kts
 Dim: 49.39 (45.00 pp) × 9.10 × 5.70
 M: 2/5-cyl. Akers diesels; 1 prop; 1,600 hp
 Electric: 360 kw
 Man: 45 tot.

Remarks: Served U.S. Navy 1946-57. Commissioned in German Navy 21-1-57 as a tender (Type 419). Converted for use as an intelligence collector circa 1968.

SEAGOING TUGS

| • 3 Baltrum (Type 7 | '22) class | Bldr: Schi | chau, Bremerhaven |
|---------------------|------------|------------|-------------------|
| | Laid down | L | In serv. |
| A 1451 Wangerooge | 1-10-65 | 4-7-66 | 9-4-68 |
| A 1452 Spiekerooge | 20-11-65 | 26-9-66 | 14-8-68 |
| A 1455 NORDERNEY | 29-5-67 | 28-2-68 | 15-10-70 |



Spiekerooge (A 1452)

S. Terzibaschitsch, 6-84

D: 854 tons (1,039 fl) S: 13.6 kts Dim: 51.78 × 12.11 × 4.2

A: 1/40-mm AA (preserved)

M: 4 MWM 16-cyl. diesels, electric drive; 2 props; 2,400 hp

Electric: 540 kw Range: 5,000/10 Man: 31 tot.

Remarks: A 1451 is used at Cuxhaven in survival training for aircrew. Also employed as salvage tugs and port icebreakers. Sister *Baltrum* has been used as a diving-training tender since 1974; *Juist* and *Langeoog* were reconfigured for training duties during 1977-78; see page 171.

• 2 Helgoland (Type 720)-class salvage tugs

Bldr: Schichau, Bremerhaven

Laid down L In serv.
A 1457 Helgoland 24-7-64 9-4-65 8-3-66
A 1458 Fehmarn 23-4-65 25-11-65 1-2-67



Helgoland (A 1457)

L. & L. Van Ginderen, 10-82

D: 1,304 tons (1,558 fl) **S**: 16.6 kts **Dim**: $67.9 \times 12.74 \times 4.20$

A: 2/40-mm AA (II × 1) - in preservation

M: 4 MWM 12-cyl. diesels, electric drive; 2 props; 3,300 hp

Electric: 1,065 kw Range: 6,400/16 Man: 34 tot.

Remarks: Fehmann serves as a tender to the submarine training establishment. Equipped to serve as mine planters, if required.

◆ 2 Eisvogel (Type 721)-class icebreaking tugs

Bldr: Hitzler, Lauenburg

Laid down L In serv. A 1401 EISVOGEL 10-3-59 28-4-60 11-3-61 A 1402 EISBÄR 12-5-59 9-6-60 1-11-61



Eisbär (A 1402)

P. Voss, 2-84

D: 496 tons (641 fl) S: 13 kts Dim: $37.8 \times 9.7 \times 4.2$ Electron Equipt: Radar: 1/Kelvin-Hughes 14/9 M: 2 Maybach 12-cyl. diesels; 2 CP props; 2,400 hp Electric: 180 kw Range: 2,000/12 Man: 16 tot.

REMARKS: Provision for 1/40-mm AA aft.

EXPERIMENTAL SHIP

♦ 1 Type-421 former corvette

Bldr: Atlaswerke, Bremen

Laid down L In serv.

A 1449 Hans Bürkner 12-10-60 6-6

6-6-61 18-5-63

D: 983 tons (1,348 fl) **S:** 24 kts **Dim:** 80.6 × 9.42 × 3.50

A: 1/375-mm Bofors 4-barreled ASW RL (see Remarks)

M: 4 M.A.N. 16-cyl. diesels; 2 CP props; 13,600 hp Electric: 520 kVA Range: 2,180/15 Man: 50 tot.

Remarks: Employed as an ASW trials ship. Has recently carried a small variable-depth sonar. Position for two 40-mm AA (II × 1) retained, and has previously carried two 533-mm ASW torpedo tubes. Fitted with mine rails.

EXPERIMENTAL SHIP (continued)



Hans Bürkner (A 1449)

S. Terzibaschitsch, 6-83

TRAINING SHIPS

♦ 1 Type-440 cruiser type

Bldr Laid down L In serv. 17-9-59 A 59 DEUTSCHLAND Nobiskrug, Rendsburg 5-11-60 25-5-63



Deutschland (A 59)

G. Koop, 9-84

D: 4,880 tons (5,684 fl) S: 22 kts (18 cruising) Range: 6,000/17 Dim: 138.2 (130.0 pp) × 16.0 × 5.0 Man: 33 officers, 521 men (250 cadets) A: 4/100-mm AA (I × 4) — 8/40-mm AA (II × 2, 1 × 4) — 4/533-mm ASW TT-2/375-mm Bofors ASW RL (IV × 2)

Electron Equipt: Radar: 1/LW-08, 1/SGR-114, 1/SGR-105, 1/SGR-103, 4/M 45 f.c. - Sonar: 1/ELAC 1BV (med. freq.)

M: 4/2,000-hp Maybach diesels; 1 set Wahodag 8,000-hp GT; 3 props (2 CP); 16,000 hp

Boilers: 2 Wahodag, 450°C Electric: 1,500 kw Fuel: 640 tons

Remarks: Quarters for 7 instructors and 250 cadets. Can be used as a minelayer. Two Mercedes-Benz diesels replaced by Maybach engines in 1979.

◆ 1 Type-441 sail-training ship

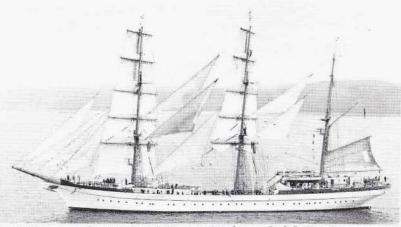
Bldr: Blohm + Voss, Hamburg

A 60 GORCH FOCK

Laid down 24-2-58

T. 23-8-58

In serv. 17-12-58



Gorch Fock - pendant number, A 60, not painted on L. & L. Van Ginderen, 5-83

D: 1,819 tons (2,005 ft) **S:** 10 kts (15 kts under sail) **Dim:** 89.32 (81.44 hull, 70.20 pp) \times 12.02 \times 5.25

M: 1 M.A.N. 6-cyl. diesel; 1 prop; 890 hp Electric: 266 kw

Range: 1,100/10 Man: 74 tot. plus 200 cadets

Remarks: 1,904 m² sail area. Carries 350 tons permanent ballast. Has made 296 nautical miles progress in one day.

YARD AND SERVICE CRAFT HARBOR TUGS

• 3 Heppens (Type 724)-class tugs Bldr: Schichau, Bremerhaven

| Laid down | L | In serv. |
|-----------|---------------------|------------------------------------|
| 29-12-70 | 2-6-71 | 27-10-71 |
| 19-3-71 | 15-9-71 | 17-12-71 |
| 29-12-70 | 2-6-71 | 26-11-71 |
| | 29-12-70 19-3-71 | 29-12-70 2-6-71 19-3-71 15-9-71 |



Ellerbek (Y 1682)

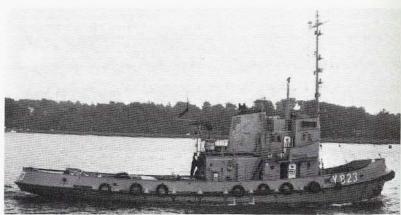
L. & L. Van Ginderen, 5-82

D: 232 tons (319 fl) **S**: 12 kts **Dim**: $26.6 \times 7.4 \times 2.6$ M: 1 MWM 8-cyl. diesel; 800 hp Electric: 120 kw Man: 6 tot.

♦ 4 Sylt (Type 724)-class tugs

Bldr: Schichau, Bremerhaven

| | L | In serv. | | L | In serv. |
|------------|---------|----------|---------------|----------|----------|
| Y 820 Sylt | 29-4-61 | 5-7-62 | Y 822 AMRUM | 6-10-61 | 25-1-63 |
| Y 821 Föhr | 13-5-61 | 11-10-62 | Y 823 Neuwerk | 12-10-61 | 5-4-63 |



Neuwerk (Y 823)

S. Terzibaschitsch, 1980

D: 266 tons (282 fl) S: 12 kts Dim: 30.2 × 7.9 × 4.0 M: 1 MAK 8-cyl. diesel; 1,000 hp Range: 1,775/12 Man: 10 tot.

♦ 8 Lütje Hörn (Type 723) class

| | L | | L |
|------------------|----------|------------------|---------|
| Y 812 Lutje Hörn | 9-5-58 | Y 816 VOGELSAND | 12-1-59 |
| Y 813 MELLUM | 23-10-58 | Y 817 NORDSTRAND | 17-4-58 |
| Y 814 KNECHTSAND | 3-12-58 | Y 818 Trischen | 27-2-59 |
| Y 815 SCHARNHORN | 9-5-58 | Y 819 Langeness | 7-4-59 |

D: 52.2 tons (57.5 fl) S: 10 kts Dim: 15.2 × 5.06 × 2.2 M: 2 Deutz 8-cyl. diesels; 2 Voith-Schneider cycloidal props; 340 hp Range: 550/9 Man: 4 tot.

• 3 miscellaneous tugs

Y 886: 41 tons; $24.11 \times 4.3 \times 1.5$; 1/MWM diesel; 320 hp Y 883, Y 884: 43 tons; 22.1 × 3.8 × 1.5; 1 Deutz diesel; 250 hp

YARD AND SERVICE CRAFT HARBOR TUGS (continued)



Vogelsand (Y 816) - Lütje Hörn class

L. & L. Van Ginderen, 5-83

WATER TANKERS

♦ 4 FW 1 (Type 705) class

| | Bldr | Laid down | L | In serv. |
|------------|--------------------------|-----------|----------|----------|
| Y 864 FW 1 | Schichau, Bremerhaven | 5-4-63 | 22-7-63 | 30-11-63 |
| Y 867 FW 4 | Jadewerft, Wilhelmshaven | 14-6-63 | 14-3-64 | 28-7-64 |
| Y 868 FW 5 | Ranke, Hamburg | 26-7-63 | 26-11-63 | 21-2-64 |
| Y 869 FW 6 | Ranke, Hamburg | 4-11-63 | 25-2-64 | 19-6-64 |



FW 5 (Y 868)

L. & L. Van Ginderen, 1984

D: 598 tons (647 fl) S: 9.5 kts Dim: 44.03 (41.1 pp) × 7.80 × 2.63 M: 1 MWM 12-cyl. diesel; 230 hp Electric: 130 kVA Fuel: 15 tons Range: 2,150/9 Man: 12 tot.

Remarks: Cargo: 343 tons. Sister FW 2 to Turkey in 1975, FW 3 to Greece in 1976. FW 6 is in reserve.

TORPEDO-RECOVERY BOATS

◆ 9 TF 1 (Type 430) class Bldr: Burmester, Bremen and Schweers, Bardenfleth

| | L | | L | | L |
|------------|----------|------------|----------|--------------|---------|
| Y 851 TF 1 | 13-10-65 | Y 854 TF 4 | 21-10-65 | Y 872 TF 106 | 10-6-66 |
| Y 852 TF 2 | 22-9-65 | Y 855 TF 5 | 28-2-66 | Y 873 TF 107 | 13-9-65 |
| Y 853 TF 3 | 13-10-65 | Y 856 TF 5 | 4-5-66 | Y 874 TF 108 | 22-9-65 |



TF 2 (Y 952)

L. & L. Van Ginderen, 5-84

D: 56 tons (63.5 fl) S: 17 kts Dim: $25.22 \times 5.40 \times 1.60$ M: 1 MWM 12-cyl. diesel; 1 prop; 1,000 hp Man: 6 tot.

◆ 1 TF 104 (Type 438) class
 Bldr: Kröger, Warnemünde

Y 886 TF 104 (ex-Süderoog) (In serv. 1-10-59)

D: 41 tons **S:** . . . kts **Dim:** $24.05 \times 4.60 \times 1.50$ **M:** 1 MWM 8-cyl. diesel; 320 hp

♦ 2 miscellaneous torpedo-recovery craft: Y 883, Y 884

AIR-SEA RESCUE CRAFT

♦ 5 KW 15 (Type 369) class

| | Diar | L |
|---|-----------------------|----------|
| Y 827 KW 15 (ex-BG 1, ex-KW 15, ex-H 15, ex-U.S.N. 57) | Schweers, Bardenfleth | 6-10-52 |
| | T. annu Vannanda | 1050 |
| Y 830 KW 16 (ex-BG 2, ex-KW 16, ex-H 16, ex-U.S.N. 54) | Lürssen, Vegesack | 1952 |
| Y 832 KW 18 (ex-H 18, ex)U.S.N. 55) | Abeking & Rasmussen | 17-11-51 |
| Y 845 KW 17 (ex-BG 3, ex-KW 17, ex-H 17, ex-U.S.N. 58) | Schürenstedt | 27-3-53 |
| Y 846 KW 20 (ex-BG 4, ex-KW 20, ex-H 20, ex-U.S.N. 56) | Lürssen, Vegesack | 1953 |



KW 18 (Y 832)

L. & L. Van Ginderen, 10-84

D: 59.5 tons (69.6 fl) **S:** 25.0 **Dim:** $28.90 \times 4.70 \times 1.42$

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 2 MTU 12-cyl. diesels; 2 props; 2,000 hp Electric: 10 kw Man: 17 tot.

Remarks: Built as patrol boats for U.S. Navy, taken over 30-11-56. Served in Border Guard 1963-1969/70.

SUBMARINE RESCUE CRAFT

♦ 1 converted Schütze-class former patrol minesweeper

Bldr L In serv.
Y 849 Stier (ex-M 1092) Abeking & Rasmussen 30-10-58 28-6-61



Stier (Y 849)

L. & L. Van Ginderen, 10-79

Remarks: Data as for Type 341 class. Retains 40-mm AA. Converted 1969. Deckhouse with decompression chamber added on fantail; also carries two rubber Gemini dinghies.

EXPERIMENTAL AND TRIALS CRAFT

• 1 Type 742 magnetic research ship

Y 841 WALTHER VON LEDEBUR Burmester, Bremen 30-6-66 21-12-67

D: 775 tons (825 fl) **S**: 19 kts **Dim**: $63.2 \times 10.6 \times 3.0$

M: 2 Maybach 16-cyl. diesels; 2 props; 5,200 hp Electric: 1,620 kw

Man: 19 crew plus technicians

EXPERIMENTAL AND TRIALS CRAFT (continued)



Walther Von Ledebur (Y 841)

P. Voss, 6-82

Remarks: One of the largest wooden ships built in modern times. Used in mine-warfare research and can be employed as a minesweeper. Two 600-kw sweep current generators.

• 2 Type 741 net tenders

Bldr: Schürenstedt K. G., Bardenfleth

| | Laid down | L | In serv. |
|---------------------------------|-----------|---------|----------|
| Y 837 SP 1 | 7-9-65 | 21-6-66 | 29-6-67 |
| Y 838 WILHELM PULLWER (ex-SP 2) | 4-10-65 | 16-8-66 | 22-12-67 |



Wilhelm Pullwer (Y 838)

L. & L. Van Ginderen, 5-82

D: 132 tons (160 fl)
S: 12.5 kts
Dim: 31.54 × 7.5 × 2.2
M: 2 Mercedes-Benz 8-cyl, diesels; 2 Voith-Schneider cycloidal props; 792 hp
Electric: 120 kw
Man: 17 crew plus trials personnel

Remarks: Used in experimental trials. Wooden hulls.

• 1 Type 740 torpedo-trials ship

Bldr: AG Weser, Bremerhaven

Y 871 Heinz Roggenkamp (ex-*Greif*) Laid down L In serv. 23-8-52 8-11-52 30-12-52



Heinz Roggenkamp (Y 871)

L. & L. Van Ginderen, 2-75

D: 935 tons (996 fl) S: 12 kts Dim: 57.19 (51.5 pp) × 9.04 × 3.10

A: 2/533-mm torpedo tubes (1 ASW, on deck; 1 underwater) — 3/324-mm Mk 32 ASW TT (III × 1) Electric: 192 kw Man: 19 crew plus trials personnel

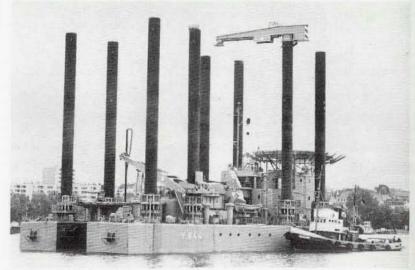
M: 1 Klöckner-Humboldt-Deutz 8-cyl. diesel; 1 prop; 1,145 hp (800 sust.)

Remarks: Former trawler purchased 1963; commissioned after reconstruction 25-9-64. Civilian crew.

1 weapons-trials barge

Bldr: Howaldtswerke, Kiel (In serv. 26-6-64)

Y 844 BARBARA



Barbara (Y 844) - with legs retracted

L. & L. Van Ginderen, 7-79

D: 3,500 tons (fl) Dim: 62.1 × 24.2 × 3.0 Electric: 1,650 kVA

Remarks: Non-self-propelled. Eight extending legs to anchor ship to bottom. Used to test guns. Civilian crew. Helicopter deck, 12-ton crane. Named for the patron saint of artillerists.

♦ 1 former fishing cutter Bldr: Lürssen, Vegesack (L: 6-47)

Y 882 Otto Meycke (ex-Meteor II)

D: 50 tons S: 9 kts Dim: $17.45 (14.95 \text{ pp}) \times 5.0 \times 1.9$ M: 1 Modag SRB55 diesel; 1 prop; 150 hp Man: 6 tot.

Remarks: Wooden craft, purchased 1960; commissioned 5-8-60. Primarily a diving tender, Civilian crew. Pendant number not painted on.

◆ 1 trials tender Bldr: Nyslands, Oslo

Y 888 FRIEDRICH VOGE (ex-Kurefjord)

Laid down
L In serv.

5-12-41
16-3-43
1-7-43



Friedrich Voge (Y 888)

L. & L. Van Ginderen, 1981

D: 260 tons (298 fl) S: 12 kts Dim: 33.2 × 6.7 × 3.3 M: 1 M.A.N. 8-cyl. diesel; 550 hp Electric: 120 kw Man: 14 tot. plus trials personnel

Remarks: Acquired 1959; commissioned 20-12-59.

• 2 ex-U.S. YMS-class minesweepers

| Y 881 Adolf Bestelmeyer | Bldr | Laid down | L | In serv. |
|---|--|-----------|----------|----------|
| | Robt, Jacob, | 13-6-42 | 13-11-42 | 17-6-43 |
| (ex-BYMS 2213, ex-YMS 213) Y 889 RUDOLF DIESEL (ex-BYMS 2279, ex-YMS 279) | City Isl., N.Y. H. C. Grebe, Chicago, Ill. | 23-1-43 | 29-7-43 | 15-10-43 |

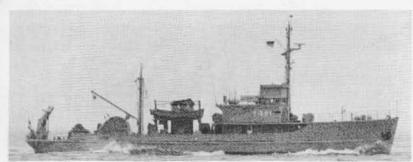
D: Y 881: 290 tons (360 fl); Y 889: 280 tons (310 fl) S: 15 kts

Dim: 42.13 (39.62 pp) × 7.47 × 2.55

M: 2 G.M. 8-268A diesels; 2 props; 1,000 hp Electric: 290 kw Range: 2,500/9 Man: 16 crew plus trials personnel

Remarks: Operated in British Navy during World War II. Acquired 1957/1960. Wooden hulls. Both employed in mine weapons trials and have two mine rails. Sister OT 2 has been stricken.

EXPERIMENTAL AND TRIALS CRAFT (continued)



Adolf Bestelmeyer (Y 881)

L. & L. Van Ginderen, 6-81

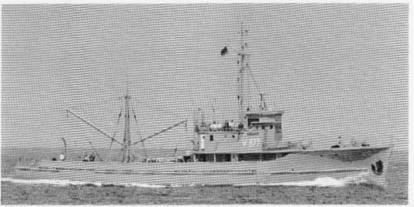
In serv.

13-5-43

• 1 ex-U.S. YMS-class minesweeper

Bldr: Weaver Bros., Orange, Texas

Y 877 HANS CHRISTIAN OERSTED Laid down L (ex-Vinstra, ex-NYMS 247, ex-YMS 247) Laid down L 14-10-42



H. C. Oersted (Y 877)

P. Voss, 6-83

D: 260 tons (302 fl) S: 16 kts Dim: 41.53 (39.62 pp) × 7.52 × 2.40

M: 2 Maybach diesels, electric drive; 2 props; 1,800 hp Electric: 120 kw (plus 680 kw from main engines)

Man: 16 crew plus trials personnel

Remarks: Operated in Norwegian Navy from completion to 1959; acquired 1960 and reconstructed and re-engined, recommissioning 12-7-62. Initially used as a degaussing tender, but since 1974 used in research.

DIVING TENDERS

• 3 Baltrum (Type 754)-class converted seagoing tugs Bldr: Schichau, Bremerhaven

| | Laid down | L | In serv. |
|-----------------------------|-----------|---------|----------|
| Y 1661 Baltrum (ex-A 1454) | 29-6-66 | 2-6-67 | 8-10-68 |
| Y 1664 Juist (ex-A 1456) | 23-9-67 | 15-8-68 | 1-10-71 |
| V 1665 LANGEOOG (ex-A 1453) | 12-7-66 | 2-5-67 | 14-8-68 |



Baltrum (Y 1661)

S. Terzibaschitsch, 1980

Remarks: Data as for seagoing tug sisters; can be armed with 1/40-mm AA. Y 1661 converted 1974, others in 1978. Used to train mine-clearance divers.

♦ 1 Type-732 small diving tender

Bldr: Burmester, Bremen

Y 1678 TB 1 (In serv. 21-6-72)

D: 70 tons
 S: 14 kts
 Dim: 27.75 × 5.77 × 1.90
 M: 1 MWM 12-cyl. diesel; 950 hp
 Electric: 36 kw

REMARKS: Also used for research.

• 1 Type-392 former inshore minesweeper

Bldr: Kröger, Rendsburg

Y 806 Hansa (ex-W 22, ex-M 2662)

Laid down 7-8-57

L 18-11-57 In serv. 23-7-58



Hansa (Y 806)

L. & L. Van Ginderen, 5-83

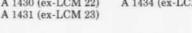
D: 155 tons (175 fl)
 S: 14 kts
 Dim: 35.18 × 6.84 × 1.95
 M: 1 Mercedes-Benz MB 820Db diesel; 1 prop; 1,000 hp
 Electric: 180 kw
 Range: 1,500/12
 Man: 20 tot.

Remarks: Wooden hull. Converted 1968-69 as a training tender for mine-clearance divers.

MISCELLANEOUS SERVICE CRAFT

◆ 7 cargo lighters, former Type 521 landing craft Bldr: Rheinwerft, Walsam (In serv. 1966-67)

A 1409 (ex-LCM 17) A 1432 (ex-LCM 24) A 1423 (ex-LCM 21) A 1433 (ex-LCM 25) A 1430 (ex-LCM 22) A 1434 (ex-LCM 26)





A 1430

L. & L. Van Ginderen, 10-81

REMARKS: For data, see under Type 521 landing craft. Redesignated as auxiliaries 1981.

♦ 1 Type 743 support tender Bldr: Fritz Staack, Lübeck (In serv. 1980) Y 1679 AM 7



AM 7 (Y 1679)

P. Voss, 10-84

D: . . . S: . . . Dim: 16.3 × 4.1 × . . . M: 1 MWM diesel; 1 prop; 180 hp

Remarks: Glass-reinforced plastic construction. Typical of the AM-series workboats: AM 1 (Y 1671), AM 3 (Y 1685), AM 4 (Y 1673), AM 5 (Y 1674), AM 6 (Y 1674), AM 8 (Y 1675), AM 9 (Y . . .), AM 11 (. . .), AM 12 (. . .). There are also 6 AK-series workboats in use.

MISCELLANEOUS SERVICE CRAFT (continued)

♦ 1 pollution control ship Bldr: C. Lühring, Brake

Y Bottsand 14-11-83 22-9-84 26-10-84 24-1-85



Bottsand

P. Voss, 10-84

D: Approx. 1,100 tons (fl) S: 10 kt Dim: 46.30 × 12.00 × 3.10

A: None Electron Equipt: Radar: 1 navigational

M: 2 diesels, 2 rudder-props; 1,600 hp—2 omnidirectional bow-thrusters; 400 hp Man: 3 officers, 3 men

Remarks: 500 grt/650 dwt. Twin hulls, hinged near the stern to open scissors-fashion to 65-deg., leaving a 42-m wide Vee opening to collect oil spills at the rate of approx. 140 m³/hr, at a speed of 1 knot. When folded can also be used as a coastal tanker and bunkerage craft. Concept known as THOR (Twin Hull Oil Recovery), which is also the name of a smaller civil-operated prototype completed in 1983. Built for the Niedersachsen Ministry for the Environment, but turned over to the Bundesmarine on loan, 24-1-85. Six cargo/spill tanks totalling 790 m³. No pendant number assigned.

♦ 2 Type-710 tank-cleaning craft Bldr: I

Bldr: Deutsche Werft, Hamburg

 Laid down
 L
 In serv.

 Y 1641 Förde
 12-1-67
 10-3-67
 14-12-67

 Y 1642 Jade
 18-5-67
 19-7-67
 6-11-67



Förde (Y 1641)

L. & L. Van Ginderen, 1983

D: 1,830 tons (fl) **S:** 8 kts **Dim:** $58.46 \times 10.40 \times 4.1$ (light)

M: 1 MWM 16-cyl. diesel; 1 prop; 390 hp Range: 750/8 Man: 16 tot.

Remarks: For steam-cleaning fuel tanks and for sludge removal. Civilian crews.

♦ 2 Type-711 self-propelled floating cranes Bldr: Rheinwerft, Walsum

Y 875 Hiev (In serv. 2-10-62) Y 876 Grief (In serv. 15-5-63)

D: 1,830 tons (1,875 fl) S: 6 kts Dim: 52.9 × 22.0 × 2.1

M: 3 MWM 600-hp diesels, electric drive; 3 vertical cycloidal props; 1,425 hp Electric: 358 kVA Man: 12 tot.

Remarks: Electric-crane capacity: 100 tons. Civilian crews.



Hiev (Y 875)

L. & L. Van Ginderen, 1980

◆ 3 Type-718 battery-charging craft 2: Oelkers, Hamburg)

Bldrs: Jadewerft, Wilhelmshaven (LP

LP 1 (In serv. 18-2-64) LP 2 (In serv. 17-4-64) LP 3 (In serv. 16-9-74)



LP 2

G. Koop

D: 192 tons (234 fl) S: 8 kts Dim: 27.6 × 7.0 × 1.6

M: 1 MTU diesel; 250 hp Electric: 960 kw (LP 3: 1,110 kw) Man: 6 tot.

Remarks: Each has two 405-kw generators and one (LP 3: two) 150-kw generator for charging submarine batteries. LP 3 is 7.5 m in beam, 1.8 m draft, 267 tons (fl).

TRAINING CRAFT

Note: Also included in this category are the three Baltrum-class former seagoing tugs and the diving tender Hansa listed under diving tenders.

3 Type 945/740 training cutters Bldr: ST 1, 2: Schipper & Goern, Lauenburg;

Y 1669 ST 1 (In serv. 1-10-75) Y 1670 ST 2 (In serv. 1-10-75) Y 1671 AM 1 (In serv. 1-8-76)



ST 2 (Y 1670)

L. & L. Van Ginderen, 10-79

TRAINING CRAFT (continued)

D: 18.5 tons (fl) S: 18.5 kts Dim: 15.50 (14.40 wl) × 3.14 × 1.37 Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 2 Klöckner-Humboldt-Deutz 6-cyl. diesels; 2 Schöttel props; 500 hp

Remarks: Used for reservist navigational/maneuvering training. Sister AK 5(Y 1673) is used for radar trials.

◆ 1 Type-368 ketch, former patrol fishing cutter (In serv. 1942-44?)

Y 834 NORDWIND (ex-W 43)



Nordwind (Y 834)

S. Terzibaschitsch, 6-84

D: 100 tons (110 fl) S: 11 kts

Dim: 27.00 (24.00 hull, 21.48 pp) × 6.39 × 2.94

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 1 Demag 5-cyl. diesel; 1 prop; 137 hp Range: 1,200/7 Man: 10 tot.

Remarks: Taken over by U.S. Navy 1945; acquired 1-7-56 by German Navy. Wooden hull; 195 m² sail area. Operated for the Mürwik Naval School.

Note: There are also 70 smaller sail-training craft, all bearing names. Included are 26 Type-914 class, 5 m long, 10 Type-913 class, 7.64 m long, 25 Type-910 (most 10.46 m o.a.), 6 Type 911, and 1 Type 912.

ACCOMMODATIONS BARGE (Type 130)

◆ Y 811 Knurrhahn (ex-U.S.N. Barge 2) (In serv. 1916)



Knurrhahn (Y 811) - outboard Arcona

S. Terzibaschitsch, 1980

D: 1,250 tons Dim: 58.94 × 11.00 × 2.60

Remarks: Used by U.S. Navy 1945-55. In German naval service 16-10-55. Accommodations for 300. Also in use for accommodations are the small barges Siebethsburg, Unke, and Vesta.

Note: There are also a number of small personnel launches, generator craft, workboats, and freight barges in service. Some of these have Y-series pendants, while most have alphanumeric pendants denoting their functions.

FLOATING DRY DOCKS

◆ 2 Type 712 Bldr: Krupp, Rheinhausen

Hebewerk 2 (In serv. 15-3-61) Hebewerk A (In serv. 13-1-61)

D: 1,000 tons Dim: 66.01 × 21.10 × . . .

Remarks: Serviced by 4 Type-713 "Hebeponton": 500 tons, 56 m by 14.8 m.

◆ 1 Type-714 self-propelled Bldr: Flenderwerft, Lübeck (In serv. circa 1945)

Y 879 SCHWIMMDOCK B

D: 4,500 tons S: . . . Dim: 156.00 × 25.00 × 3.50

M: 4 MWM 16-cyl. diesels, electric drive; 2 Schottel props; 500 hp

Remarks: In German naval service 26-10-63 at Kiel. The propellers are at the starboard forward and port aft corners.

♦ 1 Type 715 Bldr: Howaldtswerke, Hamburg (In serv. 1961)

У 842 SCHWIMMDOCK 3

D: 8,000 tons Dim: 164.0 × 30.0 × 3.5

Remarks: Seven pontoon sections.

◆ 1 Type 715 Bldr: Flenderwerke, Lübeck (In serv. 8-9-67)

DRUCKDOCK ("Dock C")

D: . . . tons Dim: 93.0 × 26.5 × 3.6



The compression floating dry dock used at Kiel for testing submarine pressure-hull integrity. An entire Type 205 or 206 submarine can fit inside. In the background can be seen floating dry dock Schwimmdock B (Y 879).

Note: Type 715 small floating dry dock Hebewerk I was sold 30-6-84.

COAST GUARD

Note: A separate paramilitary force of 1,000 men (Bundesgrenzschutz-See).

PATROL BOATS

• 8 Neustadt class Bldrs: Lürssen, Vegesack, except B-13: Schlichting, Travemünde

| BG 11 NEUSTADT | Laid down 25-11-68 | L 27-2-69 | In serv. 25-11-69 |
|---------------------|-----------------------|--------------|-------------------|
| BG 12 BAD BRAMSTEDT | 10-1-69 | 2-4-69 | 1969 |
| BG 13 UELZEN | 17-5-69 | 25-7-69 | 24-2-70 |
| BG 14 DUDERSTADT | 21-2-69 | 3-6-69 | 1970 |
| BG 15 Eschwege | 27-3-69 | 16-9-69 | 19-3-70 |
| BG 16 ALSFELD | 31-5-69 | 11-11-69 | 1970 |
| BG 17 BAYREUTH | 15-9-69 | 9-1-70 | 1970 |
| BG 18 Rosenheim | 8-11-69 | 12-3-70 | 11-70 |



Eschwege (BG 15)

P. Voss, 10-84

PATROL BOATS (continued)

D: 191 tons (218 fl) S: 30 kts Dim: 38.50 (36.00 pp) × 7.00 × 2.15 A: 2/40-mm AA (I×2) Electron Equipt: Radar: 1/Kelvin-Hughes 14/9 M: 2 Maybach 16-cyl. diesels; 2 props; 7,200 hp Fuel: 15 tons Electric: 195 kVA Range: 450/27 Man: 23 tot.

Remarks: Have an additional centerline propeller for cruising, powered by a 685-hp MWM diesel. Two additional units canceled. Hulls painted blue, superstructure white.

♦ 1 tug Bldr: Mützelbeldt-Werft, Cuxhaven (L: 29-1-76)

BG 5 RETTIN

D: 99.9 grt S: 9 kts Dim: 22.5 (20.0 pp) \times 6.6 \times 2.9 M: 2 MWM diesels; 1 prop; 590 hp

FISHERIES PROTECTION SHIPS

Note: Operated by the Ministry of Agriculture and Fisheries. Have black hulls with "Fischereischutz" (Fisheries Protection) on sides of most, grey superstructures, buff-colored masts, and orange boats.

• 7 patrol ships

Seefalke Bldr: Orenstein & Koppel (In serv. 4-8-81)



Seefalke-note folding edge to helo deck

P. Voss, 24-8-82

D: 2,386 tons (fl)
 S: 20 kts
 Dim: 83.10 (76.20 pp) × 12.80 × 4.70
 M: 2 MWM TBD 510 L8 diesels; 2 CP props; 8,000 hp
 Man: 29 tot.

Remarks: 1,980 grt. Equipped to operate in East Greenland Sea; fin stabilizers, elaborate navigation equipment, helicopter platform, bow-thruster.

MEERKATZE Bldr: Lürssen, Vegesack (In serv. 1976)



Meerkatze

P. Voss, 3-84

D: 2,386 tons S: 15 kts Dim: 76.5 × 11.8 × 5.5

M: 3 MWM diesels, electric drive; 2 props; 2,300 hp Man: 30 tot.

Solea Bldr: Sieghold, Bremerhaven (In serv. 1974)

D: 337 grt S: 12 kts Dim: 33.5 × 9.0 × 3.6 M: 1 Deutz diesel; 640 hp

Man: 11 tot.

Walther Herwig Bldr: Schlichting, Travemunde (In serv. 1972)

D: 2,500 tons **S:** 15.5 kts **Dim:** $77.0 \times 14.9 \times 5.2$

M: 2 M.A.N. diesels; 2 props; 3,380 hp Man: 35 tot.

FRITHJOF Bldr: Schlichting, Travemünde (In serv. 1967)

D: 2,140 tons S: 15 kts Dim: 76.0 × 11.8 × 5.2

M: 3 Maybach diesels, electric drive; 2 props; 2,650 hp Man: 35 tot.

ANTON DOHRN (ex-Walther Herwig) Bldr: Seebeck, Bremerhaven (In serv.

D: 1,986 grt S: 15 kts Dim: 83.0 × 12.5 × 5.2
 M: Maybach diesels; 2,210 hp Man: 38 tot.



Solea

L. & L. Van Ginderen, 10-75



Walther Herwig

P. Voss, 9-83



Frithjof

P. Voss, 1-85



Anton Dohrn

P. Voss, 12-82

FISHERIES PROTECTION SHIPS (continued)

Poseidon Bldr: Mützelfeldt, Cuxhaven (In serv. 1957)



Poseidon

L. & L. Van Ginderen, 5-81

D: 934 grt S: 12 kts Dim: 58.8 × 10.2 × . . . M: 1 Verschure diesel; 800 hp Man: 20 tot.

GOVERNMENT CIVIL RESEARCH SHIPS

Note: Operated by the German Hydrographic Institute, which is subordinate to the Ministry of Transport.

• 1 polar research ship and transport

Bldr Laid down L In serv.
POLARSTERN Howaldtswerke, Kiel 22-9-81 8-1-82 8-12-82



Polarstern

P. Voss, 12-82

D: 15,000 tons (fl)
 S: 15.5 kts
 Dim: 117.55 (102.20 pp) × 25.00 × 10.50
 M: 4 Deutz diesels, electric drive; 2 Kort-nozzle CP props; 21,120 hp

Electric: $5,400 \text{ kVA} \times 2,580 \text{ kw}$

Man: 36 crew, 40 scientists, 30 relief staff

Remarks: 3,900 dwt. Built for the Alfred Wegener Institute for Polar Research, Bremerhaven. Capable of carrying 1,500 tons of liquid cargo, plus stores to support Germany's Antarctic research station; 100 tons of provisions are carried in refrigerated vans on the forecastle. Helicopter deck and hangar. Can break 2-m ice; shell plating 43.5-mm at waterline. Has bow and stern side-thrusters. INDAS V system ("Integrated Navigation system with Data Acquisition and automatic ship's Steering").

♦ 8 (+1) oceanographic and hydrographic survey ships

Meteor II Bldr: Schlichting Werft, Travemunde (In serv. 1986)



Meteor II

Remarks: Intended to replace *Meteor*. Has asymetrical stern form and "Grim Wheel," free-wheeling prop abaft regular propeller to improve performance by roughly 10 percent.

Gauss Bldr: Schlichtingwerft, Travemünde (In serv. 1980)



P. Voss, 7-84

D: 1,372 tons (1,813 fl) S: 13.5 kts Dim: 68.7 (61.0 pp) \times 13.0 \times 4.25 Electron Equipt: Radar: 1 Raytheon 1660/12SR, 1 Raytheon RM1650/9 \times R M: 3 MAK 331 AK 800-hp diesels, electric drive; 1 prop; 1,647 hp Electric: 220 kVA Range: 4,000/13.5 Man: 19 crew plus 12 scientists

Remarks: Has special free-wheeling prop aft of propulsion propeller. Equipped with Becker flap-rudder, Denny-Brown fin stabilizers, and a 725-hp drop-down bow-thruster. Ships service power from main engine generators.

Poseidon Bldr: Schichau, Unterweser (In serv. 1976)

D: 1,050 grt S: 15 kts Dim: 58.0 × 11.4 × . . . M: MWM diesels; 1,800 hp Victor Hensen Bldr: Schichau, Bremerhaven (L: 1975)



Victor Hensen

KOMET

Gauss

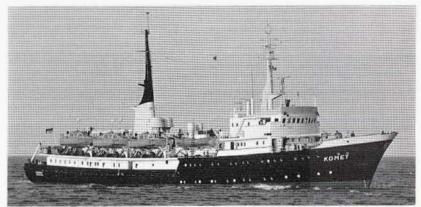
L. & L. Van Ginderen, 8-75

D: 423 grt **S:** 12 kts **Dim:** 37.04 (33.99 pp) × 9.50 × 3.07 **M:** 2 MTU 6-cyl, diesels; 1 prop; . . . hp **Man:** 28 tot.

Senckenberg Bldr... (In serv. 1976)

REMARKS: 165 grt. No other data available.

Bldr: Jadewerft, Wilhelmshaven (In serv. 1969)



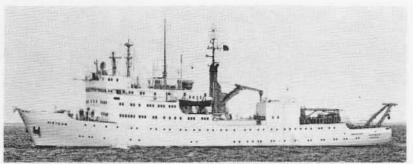
Komet - note six survey launches

P. Voss, 11-83

GERMANY — FEDERAL REPUBLIC OF GERMANY (continued) GOVERNMENT CIVIL RESEARCH SHIPS (continued)

D: 1,253 grt S: 15 kts Dim: 68.0 × 11.5 × 4.0 M: 2 Maybach diesels; 1 prop; 2,650 hp Man: 42 tot.

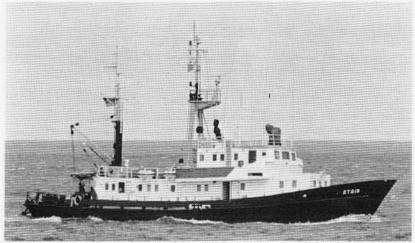
METEOR Bldr: Seebeckwerft AG Weser, Bremerhaven (In serv. 1963)



Meteor

L. & L. Van Ginderen, 7-81

D: 2,800 tons
 S: 14 kts
 Dim: 82.1 (77.3 pp) × 13.5 × 5.2
 M: Diesel-electric; 3,765 hp
 Man: 52 crew + 24 scientists
 REMARKS: To be stricken on completion of Meteor II. 2,615 grt.
 ATAIR WEGA
 Bldr: Schlichting, Travemünde (In serv. 1962)



Atair Wega

P. Voss, 8-83

D: 157 grt S: 10.5 kts Dim: 31.7 × 6.5 × 2.3 M: 1 Deutz diesel; 205 hp Man: 13 tot.

Valdivia (ex-Viking Bank) Bldr: A. G. Weser, Bremerhaven (In serv. 1961)

D: 1,317 grt S: 13 kts Dim: 73.46 (63.99 pp) × 11.03 × 5.23

M: 1 M.A.N. 6L 52/74 diesel; 1 prop; 2,160 hp

Man: 24 crew plus 16 scientists

Remarks: Purchased 1981 and converted at A. G. Weser, completing 5-82 as a submersible tender. Former stern-haul trawler. Also in government service are the research ships *Uthorn* (200 tons, 12 kts, in serv. 8-9-82) and *Bulse* (1982).

GHANA

Republic of Ghana

Personnel (1984): 750 total

MERCHANT MARINE (1984): 124 ships - 186,123 grt

CORVETTES

♦ 2 Vosper Mk 1 class

| | Bldr | L | In serv. |
|----------------|------------------------------|---------|----------|
| F 17 KROMANTSE | Vosper Ltd, Portsmouth, U.K. | 5-9-63 | 9-64 |
| F 18 Keta | Vickers Ltd, Newcastle, U.K. | 18-1-65 | 8-65 |

D: 435 tons (500 ft) S: 18 kts Dim: 53.95 (49.38 pp) × 8.7 × 3.05 A: 1/102-mm — 1/40-mm AA — 1/Squid ASW mortar (III × 1) Electron Equipt: Radar: 1/Type 978 nav., 1/Plessey AWS-1 Sonar: 1/Type 164 (med. freq.)



Keta (F 18)

G. Arra, 1975

M: 2 Bristol Siddeley-Maybach 16-cyl. diesels; 2 props; 5,720 hp Electric: 360 kw Fuel: 60 tons Range: 1,100/18; 2,900/14 Man: 5 officers, 49 men

Remarks: Fin stabilizers fitted. Quarters are air-conditioned. Both refitted 1974-75 and again in 1983-84.

PATROL BOATS

♦ 2 FBP 57 class Bldr: Lürssen, Vegesack

| | Laid down | L | In serv, |
|---------------|-----------|---------|----------|
| Р 28 Аснімота | 1978 | 14-3-79 | 27-3-81 |
| P 29 Yogaga | 1978 | 14-3-79 | 27-3-81 |



Achimota (P 28)

P. Voss, 9-80

D: 380 tons (410 fl)
 S: 30 kts
 Dim: 58.10 × 7.62 × 2.83
 A: 1/76-mm OTO Melara DP — 1/40-mm Bofors AA
 Electron Equipt: Radar: 1/Decca 1226, 1/Thomson-CSF Canopus A
 M: 3 MTU 16V538 TB91 diesels; 3 props; 10,800 hp
 Man: 40 tot.

Remarks: Has LIOD optronic gun director atop pilothouse. Carry 250 rounds 76-mm, 750 rounds 40-mm. Carry rubber dinghy for air/sea rescue and inspection purposes.

♦ 2 FPB 45 class Bldr: Lürssen, Vegesack

| | Laid down | L | In serv. |
|------------|-----------|---------|----------|
| P 26 DZATA | 16-1-78 | 19-9-79 | 4-12-79 |
| P 27 Sebo | 1-78 | 19-9-79 | 2-5-80 |



Sebo (P 27) and Dzata (P 26) - prior to arming

G. Gyssels, 1979

D: 212 tons (252 fl) **S:** 30 kts **Dim:** 44.90 (42.25 wl) \times 7.00 \times 2.50 (props)

A: -2/40-mm Bofors AA (I \times 20)

Electron Equipt: Radar: 1/nav.

M: 2 MTU 16V538 TB91 diesels; 2 props; 7,200 hp (6,000 sust.)

Electric: 408 kVA Range: 1,100/25; 2,000/15

Man: 5 officers, 30 men

Remarks: Flare RL on sides of both 40-mm mounts. Planned Thomson-CSF Canopus-A radar not mounted.

◆ 2 Sahene class Bldr: Ruthoff, Mainz, Germany (In serv. 1976)

P 24 SAHENE P 25 DELA

D: 160 tons (fl) S: 30 kts Dim: 35.2 × 6.5 × 1.8 A: 1/40-mm AA (with flare launchers attached) M: 2 MTU 16V538 TB90 diesels; 2 props; 3,000 hp Range: 1,000/30 Man: 32 tot.

GHANA (continued) PATROL BOATS (continued)



Dela (P 25)

1976

Remarks: Ordered 1973; builder went bankrupt, and four others were not delivered. Designed for rescue and fisheries protection. Rescue equipment aft.

• 2 British Ford class

Bldr: Yarrow, Scotstoun

P 13 Elmina (L: 18-10-62) P 14 Komenda (L: 17-5-62)

D: 120 tons (160 fl) S: 15 kts Dim: 35.7 × 6.2 × 2.1

A: 1/40-mm AA - depth charges

M: 2 Paxman YHAXM diesels; 2 props; 1,100 hp Fuel: 23 tons

Man: 19 tot.

Remarks: In poor condition; may no longer be in service.

GREAT BRITAIN

United Kingdom of Great Britain and Northern Ireland

PERSONNEL (1-85):

| Royal Navy | Officers | Non-officers | Total |
|---------------|----------|--------------|--------|
| Men | 8,900 | 50,500 | 59,400 |
| Women | 400 | 3,400 | 3,800 |
| Royal Marines | | | 1 |
| Men | 600 | 6,900 | 7,500 |
| Total | 9,900 | 60,800 | 70,700 |

In addition, there were about 22,900 (300 women) Regular Reservists and 5,300 (1,200 women) Royal Naval Volunteer Reserves and 3,300 Royal Marine Reservists (of whom 1,047 are in the Volunteer & Auxiliary). There were also 2,680 members of the Royal Naval Auxiliary Service (RNAS). About 75,000 civilians are employed, including those who man the ships and craft of the Royal Fleet Auxiliary Service and the Royal Maritime Auxiliary Service. During 1985-86, Royal Naval Volunteer Reservists will rise to 7,800 total, Royal Marine Volunteer Reservists to 1,580, and the Royal Naval Auxiliary Service to 3,242 men and women.

Merchant Marine (1984): 2,468 ships - 15,874,062 grt (tankers: 351 - 7,815,777 grt)

WARSHIPS IN SERVICE, UNDER CONSTRUCTION, OR ON ORDER AS OF 1 JANUARY 1986

| • 3 aircraft carriers | L | Tons | Main armament | | |
|--|---------|--------------------|---|--|--|
| 3 Invincible | 1977-81 | 16,000 | 1/Sea Dart, 5/Sea Har- rier, 9/Sea King | | |
| ♦ 33 (+6) submarines | | | | | |
| | | Tons (surfaced) | | | |
| 4 Resolution (nuclear ballistic missile) | 1966-68 | 7,500 | 16/Polaris A3, 6/533- mm TT | | |
| 3 (+5) Trafalgar (nuclear attack) | 1981- | 4,200 | 5/533-mm TT | | |
| 6 SWIFTSURE nuclear attack | 1971-79 | 4,200 | 5/533-mm TT | | |
| 5 Valiant (nuclear attack) | 1963-70 | 4,000 | 6/533-mm TT | | |
| 0 (1 +) UPHOLDER | | 2,160 | 6/533-mm TT | | |
| 15 Porpoise/Oberon | 1956-66 | 2,030 | 8/533-mm TT | | |
| ♦ 15 guided-missile destroye | rs | | | | |
| 4 Manchester | 1980-83 | 3,450 | 1/Sea Dart, 1/114-mm DP, 1/Lynx | | |
| 8 Sheffield | 1971-80 | 3,150 | 1/Sea Dart, 1/114-mm DP, 1/Lynx | | |
| 1 Bristol | 1969 | 6,100 | 1/Sea Dart, 1/Limbo, 1/ Ikara, 1/114-mm DP | | |
| 2 County | 1964 | 5,440 | 1/Sea Slug, 2/Sea Cat, 2/114-mm DP, 1/Lynx | | |

| ♦ 38 (+9 +) frigates | s | | |
|-----------------------|---------|-----------|--|
| 0 (+2+) Daring | 1987- | 3,000 | Sea Wolf, 1/114-mm AA, 8 Harpoon, 1 helo |
| 0 (+4) CORNWALL | 1984- | 4,200 | 8 Harpoon, Sea Wolf, 1/114-mm AA, 2/Lynx |
| 3 (+3) Boxer | 1981-85 | 4,100 | 4/Exocet, 2/ Sea Wolf, 2/40-mm AA, 1/Lynx |
| 4 Broadsword | 1976-80 | 3,500 | 4/Exocet, 2/Sea Wolf, 2/40-mm AA, 1/Lynx |
| 6 Amazon | 1971-75 | 2,750 | 4/MM 38 Exocet, 1/Sea Cat, 1/114-mm DP, 1/ Lynx or Wasp |
| 23 Leander | 1961-71 | 2,450-650 | 1, 2, or 3/Sea Cat, or 1/Sea Wolf, 2/114-mm and/or 40-mm, 1/ Wasp, 1/MM 38 Exo- cet or Ikara in 14, ASW weapons |
| 2 Rothesay | 1957-60 | 2,380 | 2/114-mm DP, 1/Sea Cat, 1/Wasp, 1/Limbo |

- ◆ 43 (+3) patrol ships, boats, and craft
- 40 (+8) mine warfare ships
- ♦ 7 (+1) amphibious warfare ships

WEAPONS AND SYSTEMS

A. MISSILES AND BOMBS

· strategic ballistic missiles

Trident 2D-5

Bldr: Lockheed

U. S. missile with a delivery vehicle and payload of British design and manufacture, with an independent trajectory capability (MIRV). The agreement for the acquisition of Trident was signed 14-15 July 1980. The submarines to carry Trident will not be ready until the 1990s; 80 Trident missiles are to be acquired.

Polaris A-3TK

The nuclear-powered ballistic-missile submarines of the *Resolution* class employ Polaris A-3 missiles with a payload package of entry vehicles of British design and manufacture. The payload is designated Chevaline and is composed of six 150-kT warheads with greatly improved penetration aids. Chevaline employs post-boost guidance to improve accuracy and entered service late in 1982, the missile thus being typed Polaris A-3TK.

surface-to-air missiles
 Sea Dart (GWS.30)

Bldr: British Aerospace Dynamics Group



Sea Darts and launcher on Liverpool (D 92)

L. & L. Van Ginderen, 11-83

Medium-range system (35 miles, interception altitudes from 100 to 60,000 ft) Length: 4,400 m Diameter: 0.42 m Wingspan: 0.91 m Weight: 550 kg Propulsion: solid-propellant booster, ramjet sustainer

Guidance: semi-active homing Fire control: Type 909 radar Fitted on the *Bristol, Sheffield, Manchester,* and *Invincible* classes Mk 30 Mod. 0 launcher on the *Bristol;* the lighter Mk 30 Mod. 2 on the *Sheffield* and *Invincible* classes. Improvements in low-altitude capability and response time are being

MISSILES AND BOMBS (continued)

Sea Slug Mk 2 Bldr: British Aerospace Dynamics Group

Short-range system (15 miles slant range, 500 to 50,000 ft) Wingspan: 1,420 m (1.600 with fins) Length: 5.94 m Diameter: 0.41 m Weight: 900 kg (2,000 kg with boosters)

Speed: Mach 1.8

Propulsion: solid propulsion system with four solid bosters

Fire control: Type 901, a beam-riding radar

Fitted on the "County"-class DDGs; the Mk 1 version has been retired. Now primarily to be used against surface targets.

Sea Wolf (GWS.25) Bldr: British Aerospace Dynamics Group

Short-range missile system (5,000 m) Length: 1.9 m Wingspan: 0.45 m Diameter: 0.3 m Weight: 82 kg

Guidance: radar

Fire control: Marconi Type 910 pulse-doppler radar, which permits control of 2-missile salvos, or by electro-optical tracker

Fitted on Broadsword-class frigates; being installed on some Leander class

Launcher contains six missiles (total weight with missiles: 3,500 kg) Target designation is via the combined Type 967-968 radar

A vertical-launch version (GWS.26) is in development, and a new GWS.25 Mod. 3

fire-control system employing the Marconi Type 911 (ex-805SW) search-and-track radar, with DN 181 Blindfire guidance, and upgraded features to the Type 967-968 radar is now being delivered. A simplified 4-missile adaptation, using the Sea Cat quadruple launcher was being developed with government assistance in 1985.

Sea Cat (GWS.20, 22, and 24) Bldr: Short Bros. and Harland

Length: 1.47 m Wingspan: 0.65 m Range: 5,300 m (max.)

Weight: 68 kg Diameter: 0.2 m Propulsion: 2-stage solid propellant

Guidance: GWS.22 or GWS.24 radar, or GWS.20 optical system

Launcher normally carries 4 missiles, although a 3-missile, lightweight launcher has been exported.

Javelin (GWS . . .) Bldr: Short Bros. and Harland

The Royal Navy began purchase of the hand-held Javelin (successor to Blowpipe) in 6-84 and conducted initial at-sea firings shortly thereafter in HMS Phoebe. Guidance is semi-autonomous, line-of-sight. The weapon will be issued to deployed units of all types for terminal defense. The Javelin missile is 1.4-m long, has a range of 4,000 m, and employs a 2-stage rocket motor. A 5-round mount is being developed.

surface-to-surface missiles

The Royal Navy has purchased the MM 38 Exocet GWS.50 (see section on France). It is employed on the "County" class, the Amazon, Broadsword, and some units of the

Two twin trailer-mounted MM 38 Exocet launchers built by Vosper Thornycroft are

maintained at Gibraltar by Royal Navy personnel.

In August 1977, it was announced that the U.S. Sub-Harpoon system would be bought for use from all nuclear attack submarines. 300 have been purchased. Additional Harpoons have been procured for use on RAF Nimrod aircraft. Harpoon 1C, for surface launching, is being purchased for "Duke" and Cornwall-class frigates.

· air-to-surface missiles

AS 12 (see section on France) wire-guided is used from Wasp helicopters on frigates.

Sea Skua (CL 834) Bldr: British Aerospace Dynamics Group

Solid propellant

Length: 2.50 m Wingspan: 0.6 m Diameter: 0.28 m Weight: 75 kg Range: 15,000 m Speed: Mach 0.8

Guidance: semi-active Warhead: 20 kg high explosive

Developed for use by Lynx helicopters, which can carry 2 or 4. An export surface ship version is being developed for small combatant use.

Bldr: British Aerospace Dynamics Group Sea Eagle (P3T)

Developed from the Anglo-French, television-guided Martel. Sea Eagle is intended for use as an anti-ship weapon by carrier-based Sea Harrier V/STOL aircraft as well as by land-based Tornado GR-1 and Buccaneer attack aircraft. Using active radar guidance, it employs the French Microturbo/Toulouse TRI-60 engine for propulsion. First aerial launchings took place in the spring of 1981. A Mk 2 version is not to be proceeded with.

Bombs

500- and 1,000-lb conventional bombs are carried on Invincible-class carriers for use by Sea Harrier fighter bombers; nuclear bombs for these aircraft are also available, it was officially stated in 1985.

air-to-air missiles

Bldr: Philco-Ford Sidewinder-IB (AIM-9L)

Infrared-homing, solid-fueled, Mach 2.5 lightweight weapon employed with Harrier V/STOL aircraft aboard Invincible-class carriers and Hermes.

Weight: 84.4 kg Diameter: 0.127 m Range: 12 nautical miles

Length: 2.90 m Wingspan: 0.61 m

B. GUNS

114-mm Mk 6

Double-barreled, semi-automatic, dual-purpose.

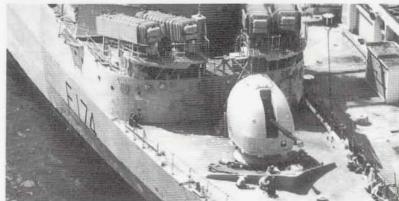
Muzzle velocity: 850 m/sec

Maximum effective range in surface fire: 17,000 m Maximum effective range in anti-aircraft fire: 6,000 m

Rate of fire: 10-12 rounds/min/barrel

Installed on some Leander- and all Rothesay-class frigates, and on "County"-class destrovers

114-mm Mk 8



Vickers, 114-mm Mk 8 gun and Exocet launchers aboard Alacrity (F 174) G. Arra, 1980

Single-barreled, automatic, dual-purpose; has a muzzle brake

Length of barrel: 55 calibers

Maximum effective range in surface fire: 23,000 m Maximum effective range in anti-aircraft fire: 6,000 m

Rate of fire: 25 rounds/min

Arc of elevation: -10° +53° Shell weight: 21.0 kg

Light gunmount with glass-reinforced plastic housing

Installed on the Bristol, Sheffield-class destroyers, and Amazon and Cornwall-class

Oto Melara 76-mm Compact

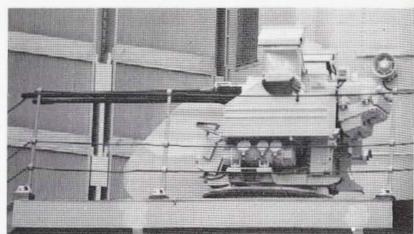
This lightweight weapon is installed in the Peacock-class Hong Kong patrol corvettes.

Bofors 40-mm

60-caliber guns are used on single Mk 7 and Mk 9 powered mounts and Mk 3 manual mounts; rate of fire on these obsolete weapons is only about 120 rpm.

Oerlikon 30-mm

Twin GCM-A02 mounts. Eight procured 1982 from BMARC as emergency close-defense weapons for Sheffield-class destroyers. Shared among class, used on units deployed to South Atlantic. Optical lead-computing sights.



Oerlikon GCM-A02 30-mm gunmount

Navpic

Rarden 30-mm LS-30B

A stabilized Lawrence-Scott single mounting for the BMARC/Oerlikon 30-mm gun. Twenty-five were ordered 9-84 for the "Duke"-class frigates and to begin replacement of old 40-mm mounts. Rate of fire: 650 rpm

Goalkeeper 30-mm SGE-30

General Electric GAU-8A, 30-mm gatling gun in EX-30 mounting co-mounted with H.S.A. radar detect-and-track fire control system. Six mounts ordered 1984 for closedefense in the Cornwall-class frigates. See additional details in Netherlands section.

GUNS (continued)

Oerlikon 20-mm

Large numbers of single-barrel GAM-B01 mountings procured 1982-83 to augment close defense on a variety of classes. An 85-caliber weapon with 1,000 rpm firing rate and optical, lead-computing sight on mount.

General Dynamics Vulcan/Phalanx 20-mm

Six U.S. Mk 15 Mod.0 CIWS (Close-In Weapon System) mounts purchased 5-82 for use on the *Invincible*-class carriers. Additional mountings have since been ordered for the *Invincible* class. Uses 6-barreled G.E. Vulcan gatling gun.

20-mm

Standard Mk 4 Oerlikon single mounts and a few twin mounts, all of World War II origin, remain in many classes.

7.62-mm machine guns

Standard NATO 7.62-mm light machine guns, having been found very useful in the Falklands War for disrupting low-level air attack, have been added in considerable numbers to frigates and destroyers, using simple pintle mountings.

C. ANTISUBMARINE WEAPONS

Mk 10 Mortar (Limbo)

Triple-barreled mortar based on the Squid of World War II. Range: 700 to 1,000 m. Fitted on some *Leander* and all *Rothesay*-class frigates.

Ikara GWS 41

U.S. Mk 46 torpedo below an Australian-designed guided missile launched by a solidfuel rocket motor

Maximum range: 18,000 m. See Australia section for further details. Fitted on the destroyer *Bristol* and six *Leander*-class frigates.

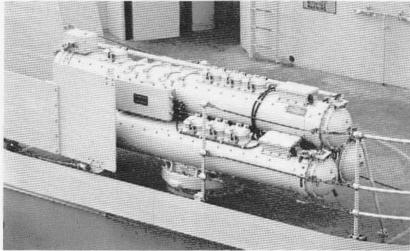


Ikara missile and launcher aboard Galatea (F 18)—the magazine is abaft the launcher G. Arra, 1980

Mk 11 depth charge

Dropped from helicopters against shallow targets. Officially reported that there are also nuclear depth bombs for ASW.

D. TORPEDOES AND MINES



Triple STWS.1 ASW torpedo tubes on a Type 42 destroyer accommodate U.S. Mk 44 and Mk 46 or U.K.-built Stingray torpedoes. Note the swinging bulletproof plate outboard the warhead end of the tubes—another Falklands War lesson learned

L. & L. Van Ginderen. 1984

U.S. Mk 44 and Mk 46 Mod. ASW torpedoes on surface ships and helicopters

The principle torpedoes of British origin are:

- the 50-year-old, straight-running Mk 8 for submarines; replaced by Sub-Harpoon in most nuclear attack submarines
- the wire-guided, submarine-launched Mk 23 for ASW, being phased out

- the wire-guided Mk 24 Tigerfish (ex-Ongar) for submarines; entered service 1979 but has not been reliable
- a new lightweight torpedo designated NST 75 11, Stingray, which entered service in 1983 for launch by helicopters and by RAF Nimrod ASW aircraft and for surface ships

Length: 2,597 m

Diameter: 324 mm

Weight: 266 kg

Speed: 45 kts
Range: 7,000 m

Depth: 800 m

Stingray uses seawater-activated batteries powering an electrically driven pump-jet propulsor and employs active/passive acoustic homing.

- The heavyweight Spearfish, in development since 1981 to replace the Mk 24 Tigerfish. It has achieved over 70 kts in trials. Weighing some 2,000 kg, it is 8.5-mm long and uses a Sundstrand turbine engine; range: about 65 km. To enter service in the late 1980s.
- The Stonefish medium-depth, modular mine and Dragonfish shallow-water, anti-invasion mine with an 85 kg charge are being procured to replace earlier mines.

E. SONARS



Type 2031(1) towed passive hydrophone array winch and reel aboard Sirius (F 40)

L. & L. Van Ginderen, 3-84

• On surface ships

| No. | Type | Frequency band | Average range (above layer) |
|-----------|----------------------------|-------------------|--------------------------------|
| 162, 162M | Sidelooking classification | High | |
| 170B | Hull, searchlight | High | 2,500 m |
| 174 | Hull, searchlight | High | 2,500 m |
| 177 | Hull, 360° scan | Medium | 6,000 m |
| 184 | Hull, 360° scan | Medium | 7,000 m |
| 185 | Underwater telephone | High | |
| 193, 193M | Minehunting | High | |
| 199* | Towed VDS | Medium | 7,000 m |
| 2008 | Underwater telephone | High | |
| 2016 | Hull, 360° scan | Multiple | |
| | | (5.5-6.5-7.5 kHz) | |
| 2031* | Towed passive array | | |
| 2050 | Hull, 360° scan | 5.5-7.5 kHz | |
| | | | |

* 199 is the British version of the Canadian SQS-504. Two versions of the Type 2031 towed passive linear array have been developed: Type 2031(1) for use on four "Exocet Leander" frigates, and Type 2031(2) on the "Duke," Boxer, and Cornwall classes.

• On submarines

| 186 | Passive | Low | |
|------|---------------------------------|------------|--|
| 187 | Active-Passive attack | Low-Medium | |
| 2001 | Active-Passive | Low | |
| 2007 | Passive | Low-Medium | |
| 2020 | a 200 dames severage law frague | | |

2020—a 360-degree coverage, low-frequency passive system for Trafalger-class nuclear-powered submarines; to be refitted to older classes

2023 — a towed linear passive array, based on the U.S. BQR-15, for SSBNs

2024 — a towed, linear passive array for use on nuclear-powered attack submarines
2040 — under development for the *Upholder*-class diesel-electric submarine; based on the Thomson-CSF "Argonaute" passive system.

2046 — towed array

2051 — "Triton" — new Plessey suite on Oberon-class diesel submarines; incorporates a "clip-on" towed array and a new, streamlined bowdome.

2054 — Plessey-built suite (active/passive/towed passive) for Trident ballistic-missile submarines.

SONARS (continued)

On helicopters

195, 195 M Dipping Medium

3,000 m

F. DATA SYSTEMS

ADA (Action Data Automation):

ADAWS 1 Aerial defense system. Fitted on "County"-class destroyers

ADAWS 2 Integrated AAW and ASW defense system. Fitted on the Bristol

ADAWS 4 Integrated AAW and ASW defense system. Fitted on the Sheffield- and Manchester-class destroyers

ADAWS 5 Aerial and ASW defense. Fitted on the *Invincible*-class aircraft carriers CAAIS (Computer-Assisted Action Information System)

In Amazon- and Broadsword-class frigates for tactical data-handling; linked to WSA 4 fire-control system

CACS1 (Computer-Assisted Command System)

To be employed in the Cornwall-class frigates. Two Ferranti FM 1600E computers, 12 Argus M700 miniprocessors

Note: Only the Invincible-class carriers and the destroyer Bristol have equipment compatible with the LINK 11/NTDS system of the U.S. Navy or the French Navy's SENIT system and other analogous NATO systems.

G. RADARS

Navigation

978-(3 cm, I band)

1002 - (9,650 MHz) for Porpoise-class submarines

1003 - (. . .) in Resolution-, Swiftsure-, and Valiant-class submarines

1006 — (9,445 MHz) in newest surface ships and submarines, navalized Kelvin-Hughes

Kelvin-Hughes Series 1600 + Red Pac, I-band (3-cm) nav. radar with manual plot, to replace Type 1006

Note: Auxiliaries use a number of different commercial navigational radars, primarily of Decca manufacture.

Combined air and surface search

967/968 - pulse-doppler, paired back-to-back antennas using H, G, and I-bands. Employed with GWS.25 Sea Wolf system in the Broadsword class. Type 967M in development, 1984.

992Q (E-F band) — stabilized medium range for low altitude air search, surface search, and target designation. To be replaced by 996/2.

993 (S-band) - short-range air-search/surface-search and target-detection radar in Leander- and Rothesay-class frigates; uses wedge-shaped "cheese" antenna

994 — Plessey AWS-4; uses 993's antenna. Replacing Type 993.

996 — Replacement for 992Q in older ships (996/2) and 996/1 version for Type 23 class frigates. Replaces Type 1030 STIR program. Also for target designation. Plessey to manufacture, chosen 9-83; variant of Plessey AWS-5.

· Air-search, early warning

965 - Metric radar, long-range early warning. On some Leander-class frigates. 965M - Employs two stacked antennas from the Type 965, with an integral Mk 10 SIF

IFF interrogator. 1022 — Dutch H.S.A. LW-08 radar with a Marconi antenna, on Invincible-class, and Manchester- and Sheffield-class destroyers. Incorporates Cossor 850 IFF interroga-

♦ Height-finding

277 (E-band) - controlled by ADAWS-1 computer for fire control of Sea Slug system in the "County" class.

Gun-direction

903 (I band) - is used in all Mk 6 and Mk 5, 114-mm gun directors (MRS 3).

♦ Missile-guidance

901 - Sea Slug system (I band)

904 - MRS 3 and GWS.22 fire control for the Sea Cat

909 — Sea Dart system (also 114-mm Mk 8 gun in the Sheffield-class destroyers)

910 - Tracking radar used with the Sea Wolf (GWS.25) system

911 — Marconi ST805 SW for Sea Wolf GWS.25 Mod. 3 system in Cornwall class; uses part of antenna array for the Dour land-based "Blindfire" radar. Also with G.W.S. 26

912 — Used for Sea Cat (GWS.24) and 114-mm gun control in Amazon-class frigates. British designation for Selenia RTN-10X system.

◆ For aircraft

Sea Spray - For Lynx helicopters - surface search and target designation

Blue Fox - For Sea Harrier - a development of Sea Spray. To be replaced by Blue Vixen

Sea Searcher - For Sea King Mk 5 ASW helicopters, for use in interrogating the LAPADS sonobuoy system

Searchwater - For surface search in Nimrod patrol aircraft and air and surface search in Sea King Mk 2 AEW helicopters

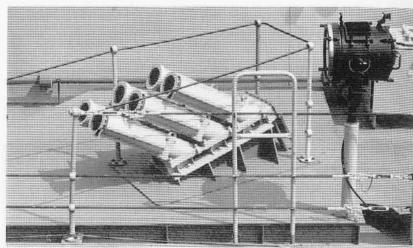
H. COUNTERMEASURES

Chaff rocket launchers

Knebworth/Corvus - an 8-tubed, 103-mm launcher in use for over a decade. Two per ship; being replaced by shield and Mk 36 Super RBOC.

Mk 36 Super RBOC - a U.S. system initially procured during the Falklands War. Uses 6-tubed, Mk 137 fixed launcher, two or four per ship. Typed "Outfit DLD."

Shield - A replacement for Knebworth/Corvus, ordered 1982. Built by Plessey. Uses 6or 8-tubed launcher. Has infrared rounds also. Also in use are chaff rounds fired by 114-mm guns and hand-dropped chaff packets for use from helicopters.



U.S. Mk 137 sextuple decoy launcher of the Mk 36 Super RBOC system on HMS Exeter - will also fire NATO Sea Gnat decoy rounds

Electronic warfare systems

UA-A1 - "Abbeyhill", covers 1-18 GHz. Used on most modern destroyer and frigate classes. Passive intercept.

UA-8/9 — older passive intercept system. 1-10 GHz

UA-13 - passive array covering 12-18 GHz

RCM-3 — gate-stealing jammer by Decca — being added to large surface combatants

I. COMMUNICATIONS

The Royal Navy employs the SCOT Super-High-Frequency (SHF) satellite communications system in carriers, destroyers, and frigates, although since there are not sufficient sets, only units deploying or fully operational carry the twin radomes. The carriers of the Invincible class and the destroyer Bristol also have the U.S. WSC-3 UHF SAT-COMM system, with two OE-82 antennas. Royal Fleet auxiliaries, hydrographic ships, and corvettes of the "Castle" class carry the commercial MARISAT SATCOMM system. Shipboard LF/MF/HF/VHF systems are increasingly integrated and are among the best in the world; single-sideband is extensively employed.

AIRCRAFT CARRIERS

3 Invincible class

| | Bldr | Laid down | L | In serv. |
|------------------|-----------------------|-----------|----------|----------|
| R 05 INVINCIBLE | Vickers, Barrow | 20-7-73 | 3-5-77 | 11-7-80 |
| R 06 Illustrious | Swan Hunter, Wallsend | 7-10-76 | 14-12-78 | 20-6-82 |
| R 07 ARK ROYAL | Swan Hunter, Wallsend | 14-12-78 | 4-6-81 | 1-11-85 |



Ark Royal (R 07) - with tug Bustler

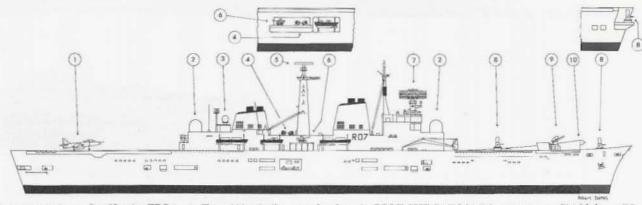
Maritime Photographic, 9-85

D: 16,256 tons (19,960 fl) S: 28 kts

Dim: 206.6 (192.87 wl) × 31.89 (27.5 wl) × 6.4 (mean; 8.8 over sonar dome) A: 1/Sea Dart GWS.30 Mod.2 system (II × 1; 22 missiles) - 2 or 3/20-mm Mk 15 CIWS (I × 2; R 07:3) - 2/20-mm AA (I × 2) - Aircraft: 5/Sea Harrier -

9/Sea King Mk 2/5

AIRCRAFT CARRIERS (continued)



Ark Royal (R 07) 1. Sea Harrier FRS.1 2. Type 909 missile-control radar 3. SCOT SHF SATCOMM antenna 4. Shield decoy RL 5. Type 992R radar 6. Twin 30-mm Oerlikon AA 7. Type 1022 early-warning radar 8. Mk 15 CIWS, 20-mm Vulcan/Phalanx gatling AA gun 9. Sea Dart launcher 10. 12-degree "ski-jump" takeoff ramp



Illustrious (R 06)

Royal Navy, 1983



Ark Royal (R 07) - without Mk 15 CIWS

L. & L. Van Ginderen, 7-85



Invincible (R 05)

L. & L. Van Ginderen, 11-84



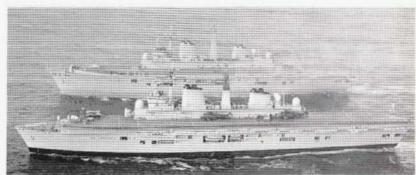
Ark Royal (R 07) - on trials, incomplete, in light condition

R.N. 1985



Illustrious (R 06) - with Novorossiysk in background

829 Squadron, 5-83



Invincible (R 05) and Ark Royal (R 07) — note difference in ski-jump angle, flight-deck length, and forecastle level PO S. Kent, R.N. 1985

Electron Equipt: Radar: 2/1006, 1/992R, 1/1022, 2/909

Sonar: 1/184, 1/762 echc-sounder, 1/185 telephone

Data system: ADAWS-5

EW: passive; 2/Knebworth/Corvus RL; Mk 36 SRBOC RL

(VI × 4) (R 07:4 Shield vice 2 Knebworth/Corvus)

M: 4 Rolls-Royce Olympus TM3B gas turbines; 2 props; 112,000 hp (94,000 sust.) Electric: 14,000 kw Range: 7,000/18

Man: 131 officers, 869 men (plus 318 aircrew)

Remarks: Redesignated "ASW aircraft carriers" in 1980, previously having been, for political reasons, considered to be a type of cruiser. Although all three are to be completed, only two will be operational at any one time. Invincible, ordered 17-4-73 and intended for V/STOL aircraft and helicopters only, has a flight deck 183 meters long with a 7-degree "ski jump" at the forward end to assist Sea Harrier aircraft in making rolling takeoffs at full combat load. The ramp on Ark Royal is 12 degrees and is 12 meters longer. The 183-meter-long by 13.5-m-wide flight deck is slightly angled to port to clear the Sea Dart launcher, which is awkwardly located on the ship's centerline and has been given an elaborate blast shield to protect the aircraft aboard. The single-level hangar has three separate bays, with the amidships bay narrower to permit passage of the gas-turbine exhausts. There are two 9.7 by 16.7-m elevators. The Type 1022 long-range air-search radar uses a Marconi antenna, but has the same electronics as the H.S.A. LW-08. Four MM 38 Exocet launchers were delected from

AIRCRAFT CARRIERS (continued)

the design. The electrical generating plant consists of 8 General Electric 1,750-kw alternators driven by Paxman Valenta 16-RPM 200A diesels of 2,700 hp each. Invincible deployed with 10 Sea Harrier and 11 Sea King to the Falklands in 4-82, and the ships can accommodate up to 22 Sea King-sized helicopters (with no Sea Harriers) if required, 16 of them in the hangar. The number of Sea Harrier normally carried is to grow to 8 in 1986-88. Type 2016 sonar may be installed in Ark Royal and is to be backfitted in the others. Can embark 960 Marines for short periods. Type 992Q radar to be replaced by Type 996. Ark Royal was completed with 3 Mk 15 CIWS (Vulcan/ Phalanx); the others are to be backfitted during overhauls (R 05 in 1985-86). Ark Royal ran first sea trials on 22-10-84; she has the CACS data system. Ark Royal accepted 1-7-85.

Note: The improved Centaur-class carrier Hermes, in reserve since 12-4-84, was stricken 1-7-85. Offered for foreign sale, the ship has been examined by the Chilean and Indian navies.

NAVAL AVIATION

The Flag Officer Naval Air Command (F.O.N.A.C.) is located at the principal naval air facility, Yeovilton, and is chiefly responsible for training and maintenance. Landbased ASW aircraft belong to the RAF and, since the reorganization of the latter, have constituted the Eighteenth, or Maritime, Group of Strike Command. While the group is part of the RAF as regards personnel and equipment, its employment is determined by the Royal Navy's commander in chief.

The Fleet Air Arm consists of:

First-line squadrons (designation characterized by a group of three figures beginning with an 8) whose missions are: attack, ASW, and helicopter assault.

Second line squadrons (designation characterized by a group of three figures beginning with a 7) that are used in schools, tests, and maintenance. Aircraft of the Royal Navy include (as of 1-86):

| | | Function | Squadron Assignment |
|---------|------------------------|-----------------------------------|-----------------------------------|
| 23(+24) | Sea Harrier FRS.1/2 | attack/interceptor | 800, 807, 899 |
| 4(+3) | Sea Harrier T.4(N)/T.4 | training | 899 |
| 71 | Sea King HAS.2,2A | ASW, logistics | 706, 810, 814, 819, 820, |
| 22 | Sea King HAS.5 | ASW | 824, 826 |
| 14(+10) | Sea King HC.4 | troop-carrying | 707,846 |
| 8 | Sea King HAS.2A(AEW) | early warning | 849 |
| 56 | Lynx HAS.2 | ASW, attack, train- | |
| | | ing | 702, 815 |
| 20(+7) | Lynx HAS.3* | ASW, attack | |
| | Wasp HAS.1† | ASW, liaison | 829 |
| 19 | Gazelle Mk2 | liaison, training | 705 |
| 12 | Wessex HU.5 | training, SAR, troop- carrying | 707, 845, 771 |
| 16(+4) | Jetstream T.2, T.3 | training | 750 |
| * * * | Canberra T.22‡ | radar training | Airwork Ltd. (con- tractor) |
| 19 | Hunter G.A. 11‡ | training | Airwork, Ltd. |
| 1 | Hunter T.7‡ | training | |
| 10 | Falcon 20‡ | training, transport | contractor |
| 13 | Chipmunk T.10 | training | Flying Grading Unit, Roborough |
| 2 | HS.125 | VIP transport | RAF detachment |
| | TTAG D L - U | J J O OF | |

Seven Lynx HAS.3 helicopters were ordered 8-85.

† Of the 40 Wasp HAS.1 remaining in 1983, a number have been retired as a result of the decline in the number of ships that require them.

‡ 10 ex-U.S. Federal Express Falcon 20 transports were leased from FR Aviation and modified to perform electronics simulation, target towing and transport duties by Falcon Jet Corp., U.S.; deliveries began 3-85 to replace the Canberra TT.18 and Hunters used in similar duties

News aircraft include: 14 Sea Harrier FRS.1 ordered in 1983, nine Sea Harrier FRS.2 ordered in 1984 for delivery 1986-88 (to permit enlarging squadrons to 8 aircraft each), 3 Sea Harrier T.4(N) 2-seat trainers, 5 Sea King HAS.5 ordered 15-2-84, with deliveries beginning 1-85, 4 Sea King HC.4 ordered 15-2-84 for delivery beginning 8-85, 7 more ordered 2-85, and one in 6-85 for delivery 1986-88, and 4 Jetstream 31 T.3 ordered 1984 for observer training. Twelve (of 24) Wessex HU.5 were to transfer to the Royal Auxiliary Air Force in 1986. One Sea Harrier was lost 7-2-85. Six additional AEW Sea King AEW conversions were to complete by 8-85 (total 18). One Sea King lost 27-6-85.

The Royal Marines operate 12 Gazelle AH.1 and 4 Lynx AH.2 helicopters.

Royal Air Force Maritime Patrol Aircraft of No. 18

(Maritime) Group (as of 1985):

34 Nimrod MR.2 Maritime patrol

42, 120, 201, 206, 236(OCU)

65 Buccaneer S.2 Maritime strike 12, 208, 237(OCU)



Lynx HAS.2 L. & L. Van Ginderen, 7-81



Wasp HAS.1 with AS.12 missiles

L. & L. Van Ginderen, 7-84



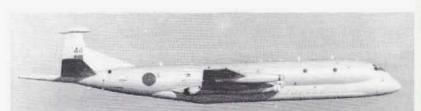
Sea Harrier FRS.1

L. & L. Van Ginderen, 7-84



Wessex HU.5 troop carrier

M.O.D., 1982



Nimrod MR.2

NAVAL AVIATION (continued)



Sea King HAS.5

Westland, 1980



Sea King HAS.2 AEW, with Searchwater radar

M.O.D., 1982

COMBAT AIRCRAF

| COMBAT AIRCRAFT | | | | | | | | | | | |
|---|---|---------------------|----------------------------|--------|----------------------------|---|--------------------------------------|--|---|---|--|
| Type and builder | Mission | Wingspan | Length | Height | Weight | Engine | Max. speed in Mach or in knots | Practical maximum ceiling in feet | Range | Weapons | Remarks |
| ♦ FIXED-WING Sea Harrier FRS.1 (British Aerospace) | Attack fighter/ interceptor | 7.6 | 14.5 | 3.71 | 10,500 | 1 Rolls-Royce Pegasus 104 vectored-thrust turbojet with 9,750 kg thrust | Mach 0.96; Mach 1.2 (diving) | 50,000+ | VTOL: 50 Miles STOL: 250 miles | 2,270 kg, max total: 4/AIM-9L Sidewinder, 2/30-mm Aden guns, 454 kg bombs (normal load) | For the Invincible class.FRS.2 version to receive Blue Vixen radar, AMRAAM air-to-air missiles, and the Pegasus 105 engine. FRS.1 has Blue Fox navigation/attack radar. |
| Nimrod MR.2 (British Aero- space) (RAF-operated) | ASW detection and engagement | 35.30 | 38.63 | 9.08 | 80,510 to 87,090 | 4 Rolls-Royce Spey (RB 168-20) Mk 250 jet engines, 5,200-hp thrust each | 450 kts | 42,000 | 12 hrs | Bomb bay for 15-m weapons (6 torpedoes + 10 buoys) 2/Harpoon, 4 Sidewinder | Can carry nuclear depth charges. Last of 34 delivered 1985. |
| ♦HELICOPTERS Wasp HAS.1 (Westland) | ASW, antisurface | Rotor diam. 9.82 | 12.29 | 3.56 | 2,495 | 1 Rolls-Royce Numbus 503 turboshaft, 710 hp | 104 kts 96 kts (cruising) | 12,000 | 234 nm. | 1-2/Mk 44 torpedo or 2/AS 12 ASM | On Amazon, Rothesay, and Leander frigates, and survey ships |
| Lynx HAS.2 and 3 (Westland) | ASW, anti-surface | 12.80 | 15.16 | 3.60 | 4,763 | 2 Rolls-Royce Gem Z turboshafts, 750 hp each ((HAS.3: Gem 4; 1,120 hp each) | 145 kts | 12,000 | 1 hr 30 min. (half hovering, half cruising) (approx. 340 nm.) | 2/Mk 44 or MK 46 torpedoes; 2-4 Sea Skua air-surface missiles | On Sheffield, Amazon, and Broadsword classes. Some to carry AN/ANS-18 dipping sonar. CTS (Central Tactical Data) system to add to HAS.3 1987-on. |
| Wessex HU-5 (Westland) | transport assault, SAR | 17.06 | 20.03 | 4.93 | 5,800 (6,120 max.) | 2 linked Bristol-Sidde- ley Gnome H 1400 turboshafts with 1,400 hp each | 130 kts | 6,000 hovering 14,000 cruising | 3 hrs (664 nm normal) | 14 troops, 2/AS 11 or 12 missiles or 2/50-mm rocket pods | Most have MIR.2 "orange-crop" ESM system. |
| Sea King HAS.2, 2A HC.4 HAS.5 HAS.2 (AEW) | ASW cargo troop-carrying ASW AEW | 18.9 | 22.15 | | 9,525 | 2 Rolls-Royce Gnome H 1400-1 turbo- shafts, 1,660 hp each driving a 5-bladed rotor and a tail rotor | 122 kts | 10,000 | 3 hr 15 min | 4/Mk 44, 46 or Stingray torpedoes or 4/Mk 11 depth charges or nuclear depth charges; (HC.4: 2,727 kg stores or 22 troops) | Sea King HAS.2 and 2A have Type 195 sonar, AW 392 radar, and Marconi-Elliot AD580 doppler navigation systems. HAS.5 has Sea Searcher radar (initially: ARI 5955), LAPADS sonobuoy system. Two HAS.2A converted 1982 with Thorn-EMI Searchwater air/surface-search radar. Many now have MIR-2 "Orangecrop" EW system. |
| Gazelle Mk 2 (Westland/SNIAS) | reconnaissance, liason | 10.5 | 11.97 | 3.18 | 917/975 | 1 Turbomeca Astazou, turboshaft, 850 hp | 167 kts (140 kts cruise) | *** | 190 n.m. | rockets | Used by Royal Marines in attack/reconn. duties and by R.N. for training. |
| EH.101 (Agusta- Westland) | ASW | 18.59 | 22.85 (15.85 folded) | 6.5 | 13,000 (6,917 empty) | 2 General Electric T 700-GE-401 turboshafts, 1,723 hp each | 160 kts | *** | 4.5 hr. on station | 4 Stingray torpedoes (2.5 hr at 100 n.m. radius); or 24 troops over 200 n.m. radius; a 4,500 kg. underslung | |

COMBAT AIRCRAFT (continued)



Gazelle, of the Royal Marines

M.O.D., 1982



Sea King HAS. Mk 2

RN, 12-84

The RAF also deploys 16 Sea King HAR.3 and 15 Wessex HC.2 SAR helicopters. Under joint development between Westland, U.K., and Agusta, Italy, is the EH.101 helicopter, intended as replacement initially for the Sea King HAS.2 and later for the HAS.5 and HC.4. A total of 86 are planned for the Royal Navy, with the first to fly in 12-86 and production to commence in 1989. Provisional data are given in the preceding table. Earlier Sea Harrier FRS.1 are to be brought up to FRS.2 standard by substituting the Blue Vixen radar for Blue Fox and adding provision for U.S. AMRAAM air-to-air missiles (a program which may be canceled). A goal of 11 Searchwater-equipped Sea King HAS.2 conversions has been set.

BALLISTIC-MISSILE SUBMARINES

Note: Royal Navy submarines no longer wear hull numbers. The assigned numbers are included here for reference only.

| ♦ 0 (+4) Trident D | 5-carrying | Bldr: Vickers Shipbldg. Barrow-in-Furness | | | |
|--------------------|------------|---|----------|--|--|
| | Laid down | L | In serv. | | |
| S N | 1986 | | 1993 | | |
| S N | | | | | |
| S N | | | | | |
| S N | | | | | |

D: 15,000+ tons (submerged) S: . . . kts Dim: $150.0 \times 12.80 \times 10.9$ A: 16/Trident D5 ballistic missiles — 4/553/mm TT (Sub-Harpoon and torpedoes) Electron Equipt.: Radar: . . .

Sonar: Type 2054 suite: active, passive, intercept, towed array M: 1 PWR 2 pressurized water reactor, steam turbines; 1 prop; 30,000 hp Man: . . .

REMARKS: First ordered late 1985. Use of the Trident D5 missile with 8 multiple, independent re-entry vehicle (MIRV) warheads decided 3-82, necessitating use of U.S. Ohio-class mid-section (although it will be shorter, as eight fewer missiles will be carried). Will replace Resolution class and require refit only every 8-9 years.

• 4 Resolution class

| | Bldr | Laid down | L | In serv. |
|-----------------|---------------------------|-----------|---------|----------|
| S 22 RESOLUTION | Vickers-Armstrong, Barrow | 26-2-64 | 15-9-66 | 2-10-67 |
| S 23 Repulse | Vickers-Armstrong, Barrow | 12-3-65 | 4-11-67 | 28-9-68 |
| S 26 RENOWN | Cammell Laird, Birkenhead | 25-6-64 | 25-2-67 | 15-11-68 |
| S 27 REVENGE | Cammell Laird, Birkenhead | 19-5-65 | 15-3-68 | 4-12-69 |



Repulse (S 23)

L. & L. Van Ginderen, 10-76



Resolution (S 22)

M.O.D., 1978

D: 7,500/8,400 tons **S:** 25/20 kts **Dim:** $129.54 \times 10.05 \times 9.15$ **A:** 16/Polaris A3TK -6/533-mm TT (bow) **Man:** 13 Officers, 130 men **Electron Equipt:** Radar: 1/1003

Sonar: 1/2001, 1/2007, 2023 towed passive array
M: 1 Rolls-Royce PWR 1 pressurized-water reactor; 1 English-Electric turbine; 1
prop; 15,000 hp

Remarks: Characteristics are very similar to those of the U.S. Lafayette class, including the propulsion machinery, the launching and guidance systems, and the inertial navigation system. The original A3TK missiles were furnished by the U.S., but the 6 Cheveline MRV warheads of 150 kilotons each re-entry vehicles are of British conception and construction; introduced 1982 on S 26; S 22 (in refit 8-82 to 10-84) in 1984, and S 23 (refit 10-84 to 10-86) in 1986. Each ship has two crews, as in U.S. Navy SSBNs. Main ship's service turbo alternator produces 1,700 kw. Have diesel generator-driven electric emergency drive.

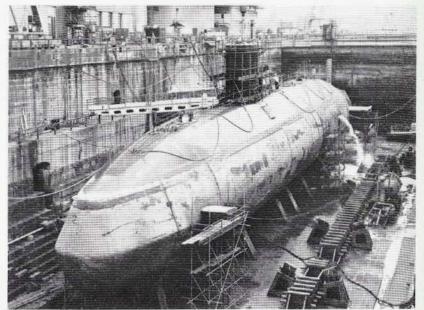
NUCLEAR-PROPELLED ATTACK SUBMARINES

| • 3 (+3+) Tr | afalgar class | Bldr: Vickers, | Barrow-in-Furn | ess |
|-----------------|---------------|----------------|----------------|----------|
| | Ordered | Laid down | L | In serv. |
| S 107 Trafalgar | 7-4-77 | 25-4-79 | 1-7-81 | 27-5-83 |
| S 87 TURBULENT | 28-7-78 | 8-5-80 | 1-12-82 | 28-4-84 |
| S 88 Tireless | 5-7-79 | 1981 | 13-7-84 | 5-10-85 |
| S 90 TORBAY | 26-6-81 | 12-82 | 8-3-85 | 1986 |
| S 91 TRENCHANT | 22-3-83 | 1983 | | 1988 |
| S 92 TALENT | 10-9-84 | 1985 | 10-86 | |



Trafalgar (S 107)

L. & L. Van Ginderen, 8-83



Trafalgar (S 107) — in dry dock, showing submerged bow planes, bow form, and sonar window L. & L. Van Ginderen, 8-84

D: 5,302 tons submerged S: 30 submerged Dim: 85.38 × 10.1 × 8.2 A: 5/533-mm TT fwd (20 Mk 24 torpedoes/Sub-Harpoon) Electron Equipt: Radar: 1/1006—Sonar: 2001, 2020, 2024 towed array, 197, 183

NUCLEAR-PROPELLED ATTACK SUBMARINES (continued)

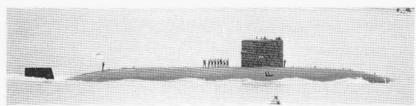
M: 1 reactor, 1 turbine; 1 shrouded pump-jet prop; 15,000 hp (1 Paxman 400-hp auxiliary propulsion diesel, electric drive)

Man: 12 officers, 86 men

Remarks: An improved version of the Swiftsure class. Coated with rubber compound anechoic tiles to reduce radiated and reflected noise.

| • 6 Swiftsure class | Bldr: Vickers. | Barrow-in-Furness |
|---------------------|----------------|-------------------|
| | | |

| | Ordered | Laid down | L | In serv. |
|----------------------------|---------|-----------|----------|----------|
| S 104 Sceptre | 1-11-71 | 25-10-73 | 20-11-76 | 14-2-78 |
| S 108 Sovereign | 16-5-69 | 18-9-70 | 22-2-73 | 22-7-74 |
| S 109 Superb | 20-5-70 | 16-3-72 | 30-11-74 | 13-11-76 |
| S 111 Spartan | 7-2-73 | 26-3-76 | 7-4-78 | 22-9-79 |
| S 112 Splendid (ex-Severn) | 26-5-76 | 23-11-77 | 5-10-79 | 21-3-81 |
| S 126 SWIFTSURE | 3-11-67 | 6-6-69 | 7-9-71 | 17-4-73 |



Spartan (S 111)

L. & L. Van Ginderen, 4-85



Sovereign (S 108)

L. & L. Van Ginderen, 7-85



Sovereign (S 108)

L. & L. Van Ginderen, 7-85

D: $4,000 \, \text{light} / 4,200 / 4,500 \, \text{tons}$ **S:** $20/28 \, \text{kts}$ **Dim:** $82.9 \times 10.12 \times 8.25$ A: 5/533-mm bow TT (20 Mk 8 and Mk 24 torpedoes/Sub-Harpoon)

Electron Equipt: Radar: 1/1003

Sonar: 2001 active/passive, 2007 active/passive, 2019 intercept, 2052 towed passive array, 197, 183

M: 1 reactor; 2 English Electric turbines; 1 prop; 15,000 hp (1 Paxman 400-hp auxiliary propulsion diesel, electric drive)

Man: 12 officers, 85 men

REMARKS: High-performance, very quiet submarines with excellent passive sonars. Have 112-cell battery. The forward diving planes are below the surfaced waterline and retract within the outer hull. Torpedo tubes reload in 15 seconds. To receive Type 2020 sonar in place of 2007, beginning with S 109 in 1985. S 108 refitted 1983 to 24-11-84.

• 5 Valiant class

| | Bldr | Laid down | L | In serv. |
|-----------------|-----------------|-----------|----------|----------|
| S 46 Churchill | Vickers, Barrow | 30-6-67 | 20-12-68 | 15-7-70 |
| S 48 Conqueror | Cammell Laird | 5-12-67 | 29-8-69 | 9-11-71 |
| S 50 Courageous | Vickers, Barrow | 15-5-68 | 7-3-70 | 16-10-71 |
| S 102 VALIANT | Vickers, Barrow | 22-1-62 | 3-12-63 | 18-7-66 |
| S 103 WARSPITE | Vickers, Barrow | 10-12-63 | 25-9-65 | 18-4-67 |

D: 3,500/4,200/4,900 tons **S**: 20/28 kts **Dim**: $86.87 \times 10.12 \times 8.25$ A: 6/533-mm TT fwd (26 Mk 8 and Mk 24 torpedoes/Sub-Harpoon)

Electron Equipt: Radar: 1/1003

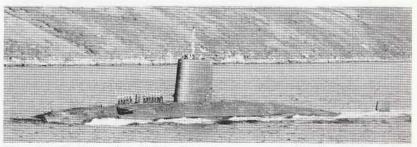
Sonar: 2001, 2007, 197, 183, 2052 towed array M: 1 pressurized water reactor; 2 English-Electric GT; 1 prop; 15,000 hp

Man: 13 officers, 90 men



Courageous (S 50)

P. Voss, 7-84



Warspite (S 103) - off the Falklands coast

L. & L. Van Ginderen, 3-84

REMARKS: The propulsion plant is of entirely British design and construction. Diving depth: 300 m. Have a 112-cell emergency battery. The hull form of this class is a development of the Dreadnought. In 1967 the Valiant made a nonstop, submerged cruise from Singapore to Great Britain in 28 days (12,000 miles). S 46 completed trials with Sub-Harpoon missiles in 2-80 and was in "Long Refit" until 7-5-83. S 103 completed a "Long Refit" and refueling 10-81, S 102 in 2-80, S 103 on 27-3-82, S 48 and S 50 in 1984-85. All but S 103 eventually to get Type 2020 sonar in place of 2001.

TORPEDO ATTACK SUBMARINES

♦ 0 (+1+11) Upholder class (Type 2400)

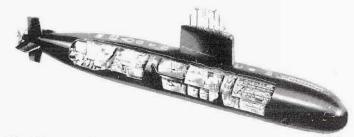
Bldr: Vickers, Barrow-in-Furness

Laid down S. . . UPHOLDER

6-84

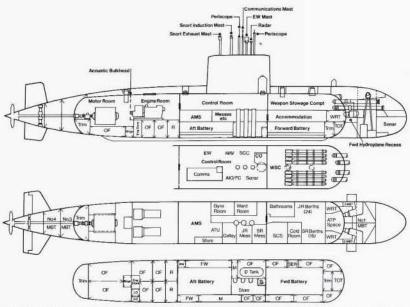
L 1986-87

In serv. 1988



Upholder (Type 2400)

Vickers, 1981



Layout of Upholder

Royal Institute of Naval Architects

D: 1,870 standard/2,126 surfaced/2,362 submerged tons S: 12/20 kts Dim: 70.26 (47.5 pressure hull) \times 7.6 \times 5.5

A: 6/522-mm TT fwd (18 tot. Mk 24 and/or Spearfish torpedoes, Sub-Harpoon)

TORPEDO ATTACK SUBMARINES (continued)

Electron Equipt: Radar: . . . — EW: Decca Porpoise Sonar: Type 2040 active/passive, Micropuffs passive, 2046 towed array

M: 2 Paxman Valenta 16 RPA 200SZ 16-cyl. diesel generators, 2,035 hp each, 2 G.E.C. 2,500-kw alternators; 1/7-bladed prop; 5,400 hp

Endurance: 49 days Fuel: 200 tons Range: 8,000 (snorkel)

Man: 9 officers, 37 men

REMARKS: All to have names beginning with "U." Will be based on the Vickers commercial Type 2400 design and are intended to provide successors to the Oberon class. The first unit was ordered late 1983. Have 11 percent reserve buoyancy when surfaced, Two 240-cell lead-acid batteries, 6,080 Amp/hr. at one-hour rate, 8,800 Amp/hr. at five-hour rate. Barr & Stroud CK 35 search periscope with Decca EW array; CH 85 attack 'scope with infrared capability. Will be able to snorkel at 19 kts. 200-m diving depth. Two Ferranti FM 1600E computers, with Thorn E.M.T. 1553B data base. Inertial navigation system. Type 2040 sonar is a version of the Thomson-CSF Argonaute system. There will be an active sonar in the sail, while the 2040's cylindrical array will be at the bow, with intercept hydrophones arranged along the sides. The sail will have a glass-reinforced plastic skin. The fifth and later units may be of a stretched 3,000-ton surfaced displacement version to obtain longer endurance.

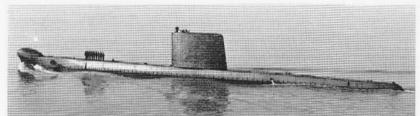
13 Oberon class, and 2 Porpoise class

| | Bldr | Laid down | L | In serv. |
|----------------|---------------------------|-----------|----------|----------|
| S 09 OBERON | HM Dockvard, Chatham | 28-11-57 | 18-7-59 | 24-2-61 |
| S 10 Odin | Cammell Laird | 27-4-59 | 4-11-60 | 3-5-62 |
| S 11 ORPHEUS | Vickers-Armstrong | 16-4-59 | 17-11-59 | 25-11-60 |
| S 12 Olympus | Vickers-Armstrong | 4-3-60 | 14-6-61 | 7-7-62 |
| S 13 Osiris | Vickers-Armstrong | 26-1-62 | 29-11-62 | 11-1-64 |
| S 14 ONSLAUGHT | HM Dockyard, Chatham | 8-4-59 | 24-9-60 | 14-8-62 |
| S 15 OTTER | Scotts SB, Greenock | 14-1-60 | 15-5-61 | 20-8-62 |
| S 16 ORACLE | Cammell Laird | 26-4-60 | 26-9-61 | 14-2-63 |
| S 17 OCELOT | HM Dockyard, Chatham | 17-11-60 | 5-5-62 | 31-1-64 |
| S 18 OTUS | Scotts, SB, Greenock | 31-5-61 | 17-10-62 | 5-10-63 |
| S 19 Opossum | Cammell Laird | 21-12-61 | 23-5-63 | 5-6-64 |
| S 20 OPPORTUNE | Scotts SB, Greenock | 26-10-62 | 14-2-64 | 29-12-64 |
| S 21 ONYX | Cammell Laird | 16-11-64 | 18-8-66 | 20-11-67 |
| S 07 SEALION | Cammell Laird, Birkenhead | 5-6-58 | 31-12-59 | 25-7-61 |
| S 08 Walrus | Scotts SB, Greenock | 12-2-53 | 22-9-59 | 10-2-61 |



Ocelot (S 17) - standard bow dome

G. Gyssels, 10-84



Opossum (S 19) - with new bow dome

L. & L. Van Ginderen, 3-84



Sealion (S 07)

L. & L. Van Ginderen, 8-84

D: 1,650/2,080/2,450 tons S: 17.5 kts Dim: 89.92 (87.45 pp) × 8.07 × 5.48 A: 8/533-mm TT (6 fwd, 2 short aft; 18 Mk 8 and Mk 24 torpedoes)

Electron Equipt: Radar: 1/1006 (S 07, 08: 1/1002) Sonar: 2007, 186, 187 (S 15, S 19, S 21: 2051 in place of 2007)

M: 2/1,840-hp Admiralty Standard Range 16VVS-AS21, 1,740-hp diesels, electric drive; 2 props; 6,000 hp

Endurance: 56 days Fuel: 298 m3 (446 m3 emergency) Man: 6 officers, 62 men (S 08: 65 tot., S 07: 71 tot.)

REMARKS: Conventional propulsion and hull form. Streamlined sail. Maximum depth: 200 meters. Snorkel. Air-conditioned. Excellent living spaces. Batteries with 448 total cells provide 5,300 Amp/hr. at 1-hr. rate; 7,420 Amp/hr. at 5-hr. rate. Oberon used in training nuclear submarine crews. Olympus completed a 2-year refit 7-84 with a new aluminum alloy sail and a 5-man exit chamber for Special Boat Service swimmers. The two after torpedo tubes, for Mk 23 short ASW torpedoes, are no longer used. The first Onyx transferred to Canada (1-64) and renamed the Ojibwa; another Onyx was built. Canada ordered three ships of this class, Australia six, Chile two, and Brazil three. The Grampus (S 04) of the Porpoise class was stricken in 1976, Rorqual (S 02) in 1976, Narwhal (S 03), Cathelot (S 06) in 1977, Finwhale (S 05) in 1978, and Porpoise (S 01) in 8-82. Sale of the Cachelot to Egypt was canceled. S 07 is used as a "padded target" for ASW weapons trials.

Nine (including S 19 in 1984, S 15, S 10, and S 21) are being modernized with the Type 2051 sonar forward and Type 2046 "clip-on" passive towed array, Ferranti-Gresham Lion Oberon Dual Guidance System (to permit firing 2 Mk 24 torpedoes at once), and MEL Manta EW intercept gear.

GUIDED-MISSILE DESTROYERS

4 Manchester class (Type 42C)

| | Bldr | Laid down | L | In serv. |
|-----------------|--------------------|-----------|----------|----------|
| D 95 MANCHESTER | Vickers, Barrow | 19-5-79 | 24-11-80 | 16-12-82 |
| D 96 GLOUCESTER | Vosper Thornycroft | 26-10-79 | 2-11-82 | 9-85 |
| D 97 Edinburgh | Laird | 8-9-80 | 14-4-83 | 18-12-85 |
| D 98 York | Swan Hunter | 18-1-80 | 21-6-82 | 9-8-85 |



York (D 98)

L. & L. Van Ginderen, 7-85



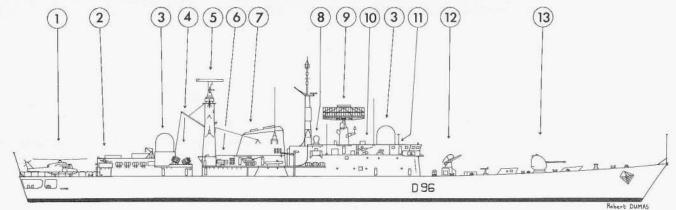
Manchester (D 95) - still with Knebworth/Corvus decoy launchers

Royal Navy, 1984



Gloucester (D 96) — from astern, showing 20-mm AA abreast hangar, squarer stern Vosper Thornycroft, 1984 than earlier Type 42 class

GUIDED-MISSILE DESTROYERS (continued)



Gloucester (D 96) 1. Lynx helicopter 2. 20-mm Mk 4 AA 3. Type 909 f.c. radar 4. Shield decoy RL 5. 992Q radar 6. STWS.1 ASW TT 7. twin 30-mm Oerlikon GCM-A02 AA 8. SCOT SATCOMM antenna for Skynet 9. Type 1022 search radar 10. 20-mm GAM-B 01 AA 11. Mk 137 decoy RL for Mk 36 SRBOC system 12. Sea Dart launcher 13. 114-mm Mk 8 DP gun

D: 4,100 tons (4,775 fl) **S**: 29.5 kts (18 cruising)

Dim: 141.12 (132.3 wl) × 14.90 × 5.80 (4.20 hull)

A: 1/Sea Dart GWS.30 syst. (II \times 1, 40 missiles) —1/114-mm Mk 8 DP —4/30-mm Oerlikon AA (II \times 2) —4/20-mm AA (I \times 4) —6/324-mm STWS.1 ASW TT (III \times 2) —1/Lynx helicopter

Electron Equipt: Radar: 1/1006, 1/992Q, 1/1022, 2/909 Sonar: 1/2016 (D 95: 1/184M, 1/162M)

EW: UA-A1 passive, 2/Type 690 active, 4/Shield chaff RL (VI × 4) — D 35: 2/Knebworth/Corvus, (VIII × 2),

2/Mk 36 SRBOC (VI × 2)

M: COGOG: 2 Rolls-Royce Olympus TM3B gas turbines of 27,200 hp each for boost, 2 Rolls-Royce Tyne RM1C of 5,340 hp each for cruise; 2/5-bladed CP props; 54,400/10,680 hp

Electron Equipt: 4,000 kw (4/1,000-kw diesel sets) Range: 4,750/18 Fuel: 610 tons Man: 26 officers, 81 senior petty officers, 194 men

Remarks: A lengthened version of the *Sheffield* class intended to provide better seaworthiness, endurance, and habitability, but having no change in armament despite the additional 16-m overall length. Have larger Sea Dart magazine. The ADAWS 7 combat data system is carried. Have LINK 11 data link system. D 95 ordered 10-11-78, D 96 on 27-3-79, and D 97 and D 104 on 25-4-79. No additional ships of this class are planned. Completion of D 97 delayed by strike at yard. D 96 delivered 16-5-85.

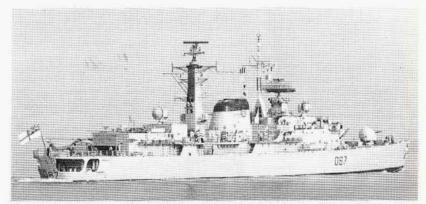
All are to have Type 992Q radar replaced by Type 996. The close-in AA suite is temporary, consisting of 4/20-mm AA (two each Mk 4 aft and Oerlikon GAM-B01 abreast bridge) and two twin 30-mm amidships; this may be replaced with Sea Wolf and/or a modern close-defense gun. D 95 has older sonar suite and earlier decoy rocket launchers aft. All have two U.S. Mk 137 chaff RL (Mk 36 Super RBOC system), which will eventually fire the NATO Sea Gnat decoy. Several 7.62-mm mg are carried, including one on each bridge wing. Active EW jammers flank the Type 1022 radar's pylon.

♦ 8 Sheffield class (Type 42)

| | Bldr | Laid down | L | In serv. |
|------------------|--------------------|-----------|---------|----------|
| D 86 Birmingham | Cammell Laird | 28-3-72 | 30-7-73 | 3-12-76 |
| D 87 NEWCASTLE | Swan Hunter | 21-2-73 | 24-4-75 | 23-3-78 |
| D 88 Glasgow | Swan Hunter | 7-3-74 | 14-4-76 | 24-5-79 |
| D 89 Exeter | Swan Hunter | 22-7-76 | 25-4-78 | 19-9-80 |
| D 90 Southampton | Vosper Thornycroft | 21-10-76 | 29-1-79 | 23-7-81 |
| D 91 NOTTINGHAM | Vosper Thornycroft | 6-2-78 | 12-2-80 | 8-4-83 |
| D 92 Liverpool | Cammell Laird | 5-7-78 | 25-9-80 | 9-7-82 |
| D 108 Cardiff | Vickers, Barrow | 3-11-72 | 22-2-74 | 19-10-79 |



Southampton (D 90) — en route Falklands with extra AA, SCOT domes, no pendant number L. & L. Van Ginderen, 10-84



Newcastle (D 87) — refitted with Type 1022 radar; note domes off Type 909 f.c. radars L. & L. Van Ginderen, 6-84



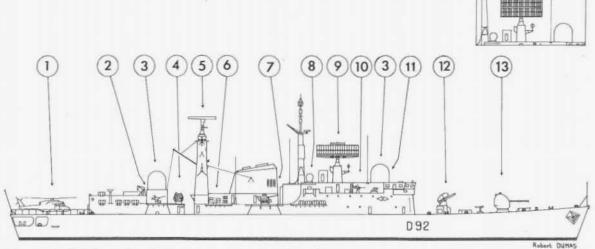
Exeter (D 89) — EW domes on aft mast, additional AA guns not aboard L. & L. Van Ginderen, 2-84



Nottingham (D 91)

L. & L. Van Ginderen, 7-85

GUIDED-MISSILE DESTROYERS (continued)



Liverpool (D 92) 1. Lynx helicopter 2. 20-mm Oerlikon GAM-B01 AA 3. Type 909 f.c. radar 4. Knebworth/Corvus chaff RL 5. Type 992Q surface/air-search radar 6. Triple STWS.1 ASW TT 7. twin 30-mm Oerlikon GCM-A02 AA 8. SCOT SATCOMM antenna for Skynet 9. Type 1022 air-search radar 10. 20-mm Mk 4 AA 11. Mk 137 decoy launcher for Mk 36 SRBOC system 12. Sea Dart launcher 13. 114-mm Mk 8 DP gun

D: 3,150 tons (4,100 fl) S: 28 kts (18 cruising) Dim: 125.0 (119.5 pp) × 14.34 × 5.8 (4.2 hull)

A: 1/Sea Dart GWS.30 Mod. 2(II × 1, 20 missiles) — 1/114-mm Mk 8 DP — 4/30-mm Oerlikon AA (II × 2) — 4/20-mm AA (I × 4) — 6/324-mm STWS.1

ASW TT (III × 2) — 1/Lynx helicopter — see Remarks Electron Equipt: Radar: 1/1006, 1/1022, 1/992Q, 2/909 Sonar: 1/184M (D 88: 2016), 1/162M

EW: UA-A1 passive 2/Type 690 active (some), Knebworth/ Corvus chaff RL (VIII×2), Mk 36 SRBOC (VI×2)

M: COGOG; 2 Rolls-Royce Olympus TM3B gas turbines, 27,200 hp each for high speed; 2 Rolls-Royce Tyne RM1A gas turbines, 4,100 hp each for cruising; 2/5-bladed CP props (D 89 and later Tyne RM1C, 5,340 hp each)

Electric: 4,000 kw (4/1,000-kw diesel sets) Range: 650/30; 4,500/18 Man: 26 officers, 273 men maximum (normal 250-280 tot.)

Remarks: Have ADAWS 4 tactical data system. Cardiff, delayed by labor problems, was completed by Swan Hunter. Completion of Glasgow delayed by fire 9-76. All can carry SCOT radomes for Skynet SHF satellite communications system. Very cramped ships. Helicopter used for surveillance and attack (Sea Skua missiles) as well as ASW. Have "Agouti" bubble ejector system for propellers (which rotate inwardly) to reduce cavitation noise. Two pair fin stabilizers fitted. D 89 and later had a taller mainmast and Type 1022 radar forward vice Type 965M; Type 965M was replaced in 4 early ships, beginning with D 108 and D 87 in 1984. Those same ships are updated with the ADAWS 7 data system and stack water spray equipment to reduce IR signature. In 1985 it was announced that this class would be given mid-life refits, guaranteeing longer retention; the Sea Dart system is to be improved.

Class prototype, Sheffield (D 80), foundered 10-5-82, having been hit by an Argentine AM 39 Exocet missile on 4-5-82. Coventry (D 118) was lost to bombs on 25-5-82. This class was found to be deficient in damage-control design during the Falklands War and also to be limited in sensor capability and self-defense, although the Sea Dart system functioned effectively. All will ultimately receive a new-design point-defense

As an interim measure, all ships have had 2/20-mm Oerlikon GAM-B01 AA mounts added on platforms abreast the after Type 909 radome, while deploying ships mount twin Oerlikon GCM-A02 30-mm mounts (on-mount sights only) on platforms that replaced the boats, abreast the stack. U.S.-supplied Mk 137 chaff rocket launchers are

now mounted just abaft the pilothouse, and some ships are receiving enhanced electronic warfare suites. The Type 992Q radar is to be replaced by the new Type 996, and Type 2016 sonar is to replace the Type 184M. All receiving 2/7.62-mm mg on the bridge wings.

* 1 Bristol (Type 82) class

Bldr Laid down L In serv.
D 23 Bristol Swan Hunter 15-11-67 30-6-69 31-3-73

D: 6,100 tons (7,100 fl) S: 28 kts

Dim: 154.60 (149.90 wl) × 16.77 × 5.20 (6.85 over sonar)

A: 1/Sea Dart GWS.30 (II \times 1, 40 missiles)—1/114-mm Mk 8 DP—4/30-mm AA (II \times 2)—4/20-mm AA (I \times 4)—1/Ikara GWS.40 ASW syst. (I \times 1, 32 missiles)

Electron Equipt: Radar: 1/1006, 1/965M, 1/992Q, 2909, 2/Ikara control Sonar: 1/184M, 1/162M

EW: UA-A1, Mk 36 SRBOC chaff RL (VII × 4), 2 Knebworth/Corvus chaff RL (VIII × 2)

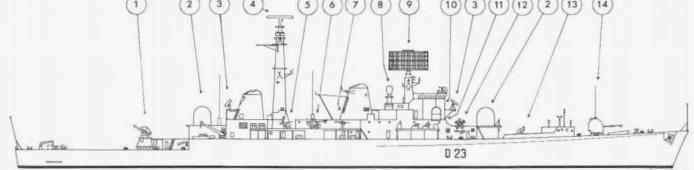
M: COSAG; 2 A.E.I. GT (15,000 hp each) and 2 Rolls-Royce Olympus TM1A gas turbines (22,300 hp each); 2 props; 74,600 hp

turbines (22,300 hp each); 2 props; 74,600 hp Boilers: 2 Babcock & Wilcox, 49.2 kg/cm² pressure, 510°C superheat Electric: 7,000 kw Range: 5,000/18 Man: 29 officers, 378 men



Bristol (D 23) - paying off for refit, 31-7-84

Walles Foto



Bristol (D 23) 1. Sea Dart launcher 2. Type 909 f.c. radar 3. U.S. OE-82 antenna for WSC-3 UHF SATCOMM 4. Type 992Q radar 5. 20-mm Oerlikon GAM-B01 AA 6. twin 30-mm Oerlikon GCM-A02 AA 7. 20-mm Mk 4 AA 8. SCOT antenna for Skynet SHF SATCOMM 9. Type 965M radar 10. Ikara tracking radar 11. Mk 137 chaff RL for Mk 36 SRBOC system 12. Knebworth/Corvus chaff RL 13. Ikara launcher

GUIDED-MISSILE DESTROYERS (continued)

Remarks: Designed as an escort for the 50,000-ton aircraft carrier Furious when construction of the latter was being considered. There were to be eight in the class, but this ship, ordered in 10-66, was the only one built. Four pair fin stabilizers. Although nominally commissioned in 1973, she had not been accepted for active service by the time of her first refit in 1976-78. Equipped with the LINK 11 automated action data communications system, for the U.S. NTDS or French SENIT systems. Equipped with the ADAWS 2 data system. Designated flagship of the Third Flotilla in 1980 and given the U.S. WSC-3 satellite communications equipment. Can land a helicopter, but has no hangar. Only ship with two Ikara ASW missile-control systems; Limbo triple ASW mortar removed 1978. Generally considered an expensive failure, but is now Britain's largest non-carrier surface combatant. Was to have been stricken in 1985, but will now be retained and equipped with a new point-defense gun system. U.S. Mk 36 Super RBOC chaff, two twin Oerlikon GCM-AO2, 30-mm AA, and two Oerlikon GAM-B01, 20-mm AA added 1983. Boats removed. Had boiler explosion 17-7-84, just prior to entering refit.

• 2 County class

| | Bldr | Laid down | L | In serv. |
|----------------|-------------------|-----------|--------|----------|
| D 19 GLAMORGAN | Fairfield, SB&E | 13-9-62 | 9-7-64 | 11-10-66 |
| D 20 FIFE | Vickers-Armstrong | 1-6-62 | 9-7-64 | 21-6-66 |



Fife (D 20) — with Sea Slug launcher replaced by deckhouse

Maritime Photographic, 9-85



Glamorgan (D 19)

Gary Davies, 5-85

D: 5,440 tons (6,200 fl) S: 32.5 kts (30 sust.)

Dim: 158.55 (153.9 pp) \times 16.46 \times 6.3 (max.) Man: 33 officers, 438 men A: Both: 4/MM 38 Exocet—1/Sea Slug Mk 2 system (II \times 1, 30 missiles, not in D 20)—12/114-mm Mk 6 DP (II \times 1)—6/324-mm ASW TT STWS.1 (III \times 2)—1/Lynx helicopter—D 19 also: 2/40-mm AA (I \times 2)—6/20-mm AA (II \times 2, I \times 2)—D 20 also: 2/Sea Cat GWS.22 systems (IV \times 2)—4/20-mm Mk 4 AA (I \times 4)

Electron equipt: Radar: 1/978, 1/965M, 1/992Q, 1/277, 1/901, 1/903, D 20 only: 2/904 f.c.

Sonar: 1/184M, 1/162M

EW: UA-8/9 active and passive, 2 Knebworth/Corvus chaff RL, Mk 36 SRBOC chaff RL (VI × 4)

M: COSAG; 2 sets A.E.I. GT (15,000 hp each), and 4 G 6 gas turbines (7,500 hp each); 2 props; 60,000 hp total

Electric: 4,750 kw Fuel: 600 tons Range: 3,500/28

Boilers: 2 Babcock & Wilcox; 49.21 kg/cm² pressure, 510°C superheat

Remarks: Four pairs of fin stabilizers. Twin rudders. Air-conditioned. Remote control of the boilers and engines from a command post that is completely protected from radioactive contamination. Sea Slug missile stowage extends to the midships area and is more than 80 meters long; it is inboard, along the centerline of the ship, and contains two parallel rows of 15 missiles, which are now primarily used against surface targets. Fitted with four Exocet anti-ship missiles in 1974-76. Of the Sea Slug Mk 2-equipped ships, the Fife (D 20), which was inactive from 9-79 as a harbor training ship, entered "Long Refit" in July 1980 and recommissioned 31-3-83, and Glamorgan (D 19) and Antrim (D 18) had their careers extended as a result of the Falklands War; Norfolk (D 21) was sold to Chile 17-2-82, and Antrim followed on 14-4-84. The helicopter can only be flown in calm seas (because of the poor hangar arrangement). Have the ADAWS 1 combat data-handling system. Each propeller is driven by one general steam turbine and two gas turbines for high speeds, and the steam turbine alone for cruising. There are 3 steam turbo alternators and 3 gas turbine generators.

Glamorgan received an accommodations deckhouse on her helicopter deck late in 1984 and is used in training. Pakistan has expressed interest in buying Fife. Older Sea Slug Mk 1 "County," Kent (D 12) was towed to Devonport Dockyard 30-10-84 to convert as accommodations hulk at Portsmouth to replace Rame Head. Sea Slug launcher replaced by deckhouse on D 20, 1985.

FRIGATES

♦ 0 (+2+7+...) "Duke" (Type 23) general-purpose class

| | Bldr | Laid down | L | In serv. |
|-----------|-------------------|-----------|------|----------|
| F Norfolk | Yarrow, Scotstoun | 10-85 | 1987 | 1989 |
| F N | Swan Hunter | | | |

D: 3,000 tons (3,700 fl) S: 28 kts (15 kts electric drive) Dim: 133.0 (123.0 pp) × 16.1(15.0 wl) × 4.3 (hull)

A: 8/Harpoon SSM (IV × 2) — 1/Sea Wolf GWS.26 vertical launch group (32 missiles) — 1/114-mm Mk 8 DP — 1/30-mm Goalkeeper gatling AA — 2/30-mm Rarden AA (I × 2) — 4/324-mm TT (II × 2, fixed) — 1/EH.101 ASW belicopter

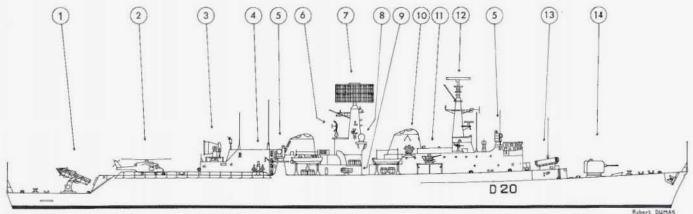
Electron Equipt: Radar: 1/1007, 1/996 Mod. 1, 2/911 Sea Wolf control Sonar: 1/2050, 1/2031(2) towed linear passive array EW: UA-F1 (Decca Cutlass) passive, Decca Cygnus jammer, 4/Shield chaff RL (VI × 4)

M: CODLAG (combined Diesel-Electric and Gas Turbine): 2 Rolls-Royce SM1A Spey gas turbines (37,540 hp); 4 Paxman Valenta 12 RPM 200A diesel generator sets (5,200 kw total) — 2/2,000-hp electric motors; 2 props; 41,540 hp

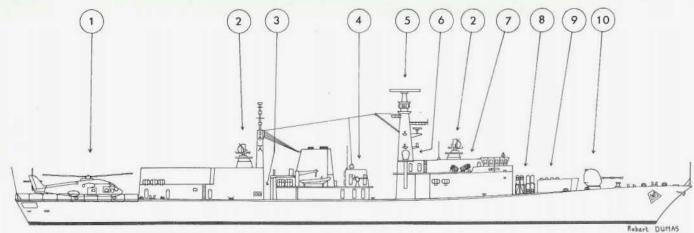
Range: 8,000/15 Fuel: 800 tons Electric: 5,200 kw

Man: 12 officers, 41 petty officers, 90 men

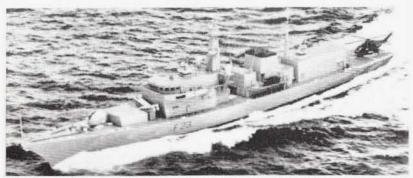
Remarks: First unit ordered 29-10-84; letter-of-intent for second signed 28-1-85. Norfolk was originally to have been named Daring. Intended as lineal replacements for the remaining Leander-class frigates. Prototype design assigned to Yarrow. Flush-decked hull, with large helicopter hangar, helo in-haul system, fin stabilizers. Design grew



Fife (D 20) 1. Sea Slug launcher 2. Lynx helicopter 3. Type 901 Sea Slug control radar 4. Sea Cat launchers (IV × 2) 5. MRS-3 firecontrol director 6. 278 height-finding radar 7. 965M early-warning radar 8. SCOT SHF SATCOMM antenna 9. STWS.1 triple ASW TT 10. Knebworth/Corvus decoy RL 11. SRBOC chaff rocket launchers (incorrectly shown as a gun) 12. Type 992Q radar 13. MM 38 Exocet launchers 14. twin 114-mm Mk 6 DP gunmount *Note*: Sea Slug launcher replaced by deckhouse, 1985.



"Duke" class 1. EH.101 helicopter 2. Type 911 radar director 3. ASW TT 4. 30-mm Rarden gun 5. Type 996 radar 6. SCOT SNF SATCOMM antenna 7. Shield decoy RL 8. Harpoon SSM (IV × 2) 9. 32 vertical-launch Sea Wolf missiles 10. 114-mm Vickers Mk 8 DP gun



"Duke" class-artist's impression

considerably as a result of Falklands "Lessons-Learned." Will have first bow-mounted sonars in the Royal Navy.

The propulsion system permits running the shaft-concentric electric propulsion motors with the power from any combination of the four 1,300-kw ship's service generators; power from both the gas turbines and the electric motors can be obtained. Fixed-pitch props, with astern power available only by electric drive. Numerous improvements in damage control, as a result of Falkland War lessons. There will be accommodations for 15 officers, 57 petty officers and 105 junior ratings, but crew size may grow. Two more were to be ordered by end-1985. May carry 2 U.S. Mk 15 CIWS AA vice Goalkeeper.

♦ 0 (+4) Cornwall (Type 22 Batch 3) general-purpose class

| Bldr | Laid down | L | In serv. |
|-------------------|---|--|---|
| Yarrow, Scotstoun | 12-9-83 | 14-10-85 | 1987 |
| Yarrow, Scotstoun | 20-12-84 | | 1988 |
| Cammell-Laird | | | 1989 |
| Swan-Hunter | | | 1990 |
| | Yarrow, Scotstoun Yarrow, Scotstoun Cammell-Laird | Yarrow, Scotstoun 12-9-83 Yarrow, Scotstoun 20-12-84 Cammell-Laird | Yarrow, Scotstoun 12-9-83 14-10-85 Yarrow, Scotstoun 20-12-84 Cammell-Laird |

D: 4,380 tons (5,250 fl) S: 30 kts Dim: 148.00(135.65 pp) × 14.75 × 5.35 hull (6.00 max.)

A: 2/Sea Wolf GWS.25 Mod. 3 systems (VI \times 2) — 8/Harpoon. SSM (IV \times 2) — 1/114-mm Vickers Mk 8 DP — 1/30-mm Goalkeeper AA gun syst. — 2/30-mm

LS-30B AA (I \times 2) — 6/324-mm STWS.2 ASW TT (III \times 2) — 2/Lynx (Sea Skua ASM, Stingray ASW torpedoes) or 1/EH.101 helicopters

Electron Equipt: Radar: 1/1006, 1/967/968, 2/911 f.c., 2/Goalkeeper f.c. Sonar: Type 2050 hull-mounted, Type 2031(2) towed linear passive array

EW: UA-A1 passive, 4/Shield chaff RL (VI × 4), Mk 36, 5RBOC (VI × 2)

M: COGAG: 2 Rolls-Royce Spey SM.1A DR gas turbines (18,770 hp each) and 2 Rolls-Royce Tyne RM.1C gas turbines (5,340 hp each); 2 Stone Manganese CP props; 48,220 hp

Electric: 4,000 kw (4/Paxman Valenta 12PA 200CZ diesel sets) Man: 286 tot. (Accommodations for 320)

Range: 7,000/18 (on Tyne gas turbines) Fuel: 650 tons

Remarks: Third series in the Type 22/Broadsword-class design, with same basic hull as Batch 2/Boxer class, but with a 114-mm gun on the forecastle, the anti-ship missile launchers moved to abaft the pilothouse and oriented athwartships. Will have EASAMS' Sea Archer GSA 8/GPEOD (Gun System Automation 8/General-Purpose Electro-Optical Director)T.V./IR/laser back-up directors for the 114-mm gun. The Goalkeeper gatling AA gunmount has its own integral I-band search/tracker and I/K-band tracking radars. Maximum generator output is 5,200 kw. All will have the CACS-1 Computer-Assisted Command System.

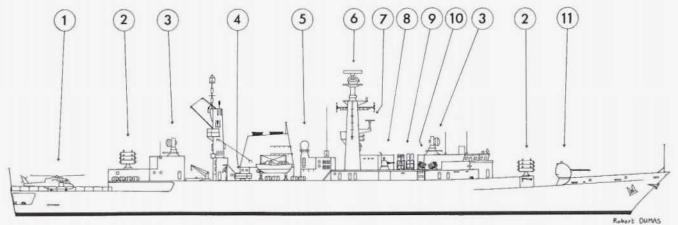
The first pair were ordered 14-12-82 and the third and fourth on 28-1-85. There are apparently to be no additional units of what is the world's largest "frigate" design.

♦ 3(+3) Boxer (Type 22 Batch 2) class ASW frigates

| | Bldr: | Laid down | L | In serv. |
|----------------|-----------------------|-----------|----------|----------|
| F 92 Boxer | Yarrow, Scotstoun | 5-11-79 | 17-6-81 | 14-1-84 |
| F 93 Beaver | Yarrow, Scotstoun | 20-6-80 | 8-5-82 | 13-12-84 |
| F 94 Brave | Yarrow, Scotstoun | 24-5-82 | 19-11-83 | 1985 |
| F 95 LONDON | Yarrow, Scotstoun | 7-2-83 | 27-10-84 | 1986 |
| F 96 SHEFFIELD | Swan Hunter, Wallsend | 29-3-84 | 9-85 | 7-87 |
| F 97 COVENTRY | Swan Hunter, Wallsend | 29-3-84 | 12-85 | 11-87 |

D: 4,200 tons (4,800 fl) **S:** 30 kts (F 94 and later: 28 kts) — 18 kts on cruise engines **Dim:** 145.0; F 94-97: 146.5 (140.0 pp) \times 14.75 \times 4.3 hull (6.0 max.)

A: 4/MM 38 Exocet (I × 4) -2/Sea Wolf GWS.25 Mod.3 syst. (VI × 2) -2/40-mm Mk 7 AA (I × 2) -6/324-mm STWS.1 ASW TT (III × 2) -2/Lynx helicopters (Sea Skua ASM, Stingray torpedoes)



Cornwall (F 99) Type 22 Batch III 1. Lynx helicopter 2. Sea Wolf launchers 3. Type 911 missile f.c. radars 4. triple STWS.1 ASW TT 5. SCOT SHF SATCOMM radomes 6. Type 967/968 radar antenna 7. Type 1006 nav. radar 8. Goalkeeper 30-mm AA should be shown atop deckhouse 9. Harpoon SSM 10. Shield decoy RL 11. 114-mm Vickers Mk 8 DP gun



Beaver (F 93) - with SCOT radomes aboard

Walles Foto, 2-85



Beaver (F 93) — note bullnose for Type 2031(2) towed array to port on fantail
L. & L. Van Ginderen, 7-84

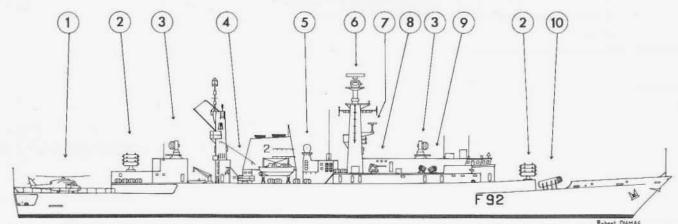


Boxer (F 92)

M.O.D., 1984



Boxer (F 92)



Boxer (F 92) class Batch II Type 22 1. Lynx helicopter 2. Sea Wolf launchers 3. Type 911 radar directors 4. triple STWS.1 ASW TT 5. SCOT SHF SATCOMM radome 6. Type 967/968 radar 7. Type 1006 nav. radar 8. 40-mm AA 9. Shield decoy/chaff RL 10. MM 38 Exocet SSM

Electron Equipt: Radar: 1/1006, 1/967-968, 2/910 (F 94-97: 2/911)

Sonar: Type 2016 hull-mounted, Type 2008, 1/Type 2031(2)

towed linear passive array

EW: UA-A1 passive, 2/690 active, Shield decoy RL (VI × 4)

chaff RL

M: F 92, F 93: COGOG: 2 Rolls-Royce Olympus TM.3B gas turbines (27,300 hp each), or 2 Rolls-Royce Tyne RM.1C gas turbines (5,340 hp each); 2 Stone Manganese CP props; 54,600 hp max.

F 95-F 97: COGAG: 2 Rolls-Royce Spey SM.1A gas turbines (18,770 hp each), or 2 Rolls-Royce Tyne RM.1C max. gas turbines (5,340 hp each); 2 CP props; 48,220 hp max. (F 94 same plant, but COGOG: 37,540 hp max.)

Range: 7,000/18 Electric: 4,000 kw Fuel: 600 tons

Man: 290 tot. (berths for 320)

Remarks: "Batch 2" employs a lengthened hull over the *Broadsword* class to improve seaworthiness, endurance, and habitability and to provide space for handling the Type 2031 towed linear passive hydrophone array. F 92 and F 93 ordered 25-4-79, F 94 (with Spey gas turbines substituted for the less-economical Olympus) ordered 27-8-81, F 95 on 23-2-82, and the other two (as Falklands war-loss replacements) on 14-12-82. To have Type 2016 hull-mounted sonar replaced by Type 2050 during first major refit. Names *Bloodhound, Boadicea*, and *Bruiser* originally selected for final three. Two 30-mm Rarden AA will replace the 40-mm AA.

Have CACS.1 data system, with 26 operators and 16 displays. F 94 is first with lightweight Marconi 805-SW (Type 911) missile directors; her hull has greater flare at the stern to permit a larger helicopter deck for the EH.101 helo, producing an overall length of 146.5 m. F 92 commissioned in 1984 for 3 years trials with the CACS.1 data system. Water-displacement fuel tanks are used, and the ships are said to have twice the range of the "Batch I" *Broadsword* class.

| • 4 Broadsword | (Type 22) class ASW frigates | Bldr: Yarrow, Scotstoun |
|----------------|------------------------------|-------------------------|
| | | |

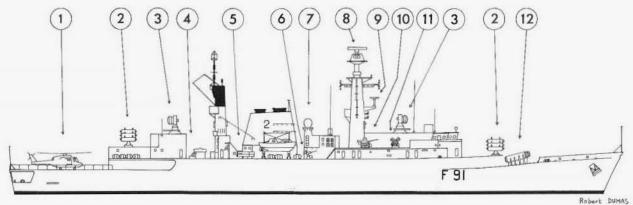
| | Ordered | Laid down | L | In serv. |
|------------------------|----------|-----------|----------|----------|
| F 88 Broadsword | 8-2-74 | 7-2-75 | 12-5-76 | 3-5-79 |
| F 89 BATTLEAXE | 4-9-75 | 4-2-76 | 18-5-77 | 28-3-80 |
| F 90 BRILLIANT | 7-9-76 | 24-3-77 | 15-12-78 | 10-4-81 |
| F 91 Brazen (ex-Boxer) | 21-10-77 | 19-8-78 | 4-3-80 | 1982 |



Brazen (F 91) — with 20-mm AA and Mk 36 SRBOC amidships, Lynx on deck Pradignac & Leo, 1984



Brilliant (F 90) G. Gyssels, 3-85



Brazen (F 91)—Type 22 Batch I 1. Lynx helicopter 2. Sea Wolf launchers 3. Type 910 radar/electro-optical directors 4. Mk 137 launchers for Mk 36 SRBOC system 5. triple STWS.1 ASW TT 6. 20-mm GAM-B01 AA 7. SCOT SHF SATCOMM radome 8. Type 967/968 radar 9. Type 1006 nav. radar 10. 40-mm AA 11. Knebworth/Corvus chaff RL 12. MM 38 Exocet launchers



Battleaxe (F 89) - high stack

L. & L. Van Ginderen, 6-84



Broadsword (F 88)

J. Goss, 1984

D: 3,500 tons (4,400 fl) S: 29 kts (18 cruise) Dim: 131.2 (125.0 wl) × 14.8 × 4.3 (6.0 sonar)

A: 4/MM 38 Exocet - 2/Sea Wolf GWS.25 syst. (VI × 2) - 2/40-mm Mk 9 AA $(I \times 2) - 2/20$ -mm Oerlikon GAM-BO1 AA $(I \times 2$; not always aboard) — 6/324-mm STWS.1 ASW TT (III × 2) —1 or 2 Lynx helicopter Electron Equipt:: Radar: 1/1006, 1/967-968, 2/910 (GWS.25)

Sonar: 1/2008, 1/2016

EW: UA-A1, passive, 2/Type 690 active Mk 36 SRBOC chaff RL (VI × 2), 2 Knebworth/Corvus chaff RL (VIII × 2)

M: COGOG; 2 Olympus TM3B gas turbines, 27,300 hp each for high speed; 2 Tyne RM1A, 4,100 hp each for cruising; 2 CP props; 54,600 hp max. Electric: 4,000 kw (4 Paxman Ventura diesel sets; 450 v., 3 ph., 60 Hz) Range: 4,500/18 (on Tyne); 1,200/29 (on Olympus) Man: 18 officers, 205 men

Remarks: Originally to have been a class of 26. Type 2016 is a multiple-frequency sonar. The Lynx can carry both ASW and antiship weapons; two were to have been carried, but only one is normally aboard. CAAIS combat data system. The 967-968 radar is a back-to-back array with track-while-scan features. Two U.S. Super RBOC chaff RL added amidships 1982-83. To be backfitted with Sea Wolf GWS.25 Mod. 3 system (Type 911 trackers) beginning in 1988 with F 88, which will also get Type 2050 sonar in place of 2016. F 89-91 have carried 2/20-mm GAM-BO1 AA amidships when on deployment. First two have higher, more elaborate stacks.

♦ 6 Amazon (Type 21) class

| | Bldr | Laid down | L | In serv. |
|-----------------|--------------------|-----------|----------|----------|
| F 169 Amazon | Vosper Thornycroft | 6-11-69 | 26-4-71 | 11-5-74 |
| F 171 ACTIVE | Vosper Thornycroft | 23-7-71 | 23-11-72 | 17-6-77 |
| F 172 Ambuscade | Yarrow, Scotstoun | 1-9-71 | 18-1-73 | 5-9-75 |
| F 173 Arrow | Yarrow, Scotstoun | 28-9-72 | 5-2-74 | 29-7-76 |
| F 174 Alacrity | Yarrow, Scotstoun | 5-3-73 | 18-9-74 | 2-4-77 |
| F 185 Avenger | Yarrow, Scotstoun | 30-10-74 | 20-11-75 | 15-4-78 |



Avenger (F 185) (Type 21) - note ASW TT, Lynx on helo deck L. & L. Van Ginderen, 11-84



Active (F 171) -4/20-mm AA, no ASW TT

Maritime Photographic, 2-85

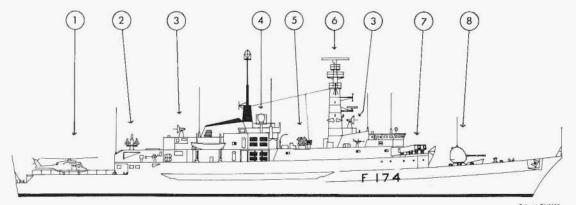


Amazon (F 169) - with Exocet added

L. & L. Van Ginderen, 5-85



Alacrity (F 174) — with Exocet, 4/20-mm AA, no ASW TT, SCOT, or UA-A1 — note C. & S. Taylor, 1984 hull reinforcement amidships



Alacrity (F 174) 1. Lynx helicopter 2. Sea Cat launcher 3. RTN-10x Orion (Type 912) radar f.c. directors 4. SCOT SHF SATCOMM radomes 5. Knebworth/Corvus chaff RL 6. Type 992Q radar 7. MM 38 Exocet launchers 8. 114-mm Vickers Mk 8 DP gun



Avenger (F 185) - with ASW TT

L. & L. Van Ginderen, 7-85

D: 2,850 tons (3,350 fl) S: 32 kts Dim: 117.04 (109.70 pp) × 12.7 × 4.6 (6.2 over sonar)

A: 4/MM 38 Exocet—1/Sea Cat GWS.24 system (IV × 1)—1/114-mm Mk 8 DP—2 or 4/20-mm Mk 4 AA (I × 2 or 4)—1/Wasp or Lynx helicopter—F 172, 184, 185 only: 6/324-mm STWS.1 ASW TT (III × 2)

Electron Equipt: Radar: 1/1006, 1/992Q, 2/912 (RTN-10X Orion)

Sonar: 1/184M, 1/162M

EW: UA-A1 passive or none, 2 Knebworth/Corvus chaff RL (VIII \times 2), FH-12 HF/DF

M: COGOG; 2 Olympus TM.3B gas turbines, 25,000 hp each; 2 Tyne RM.1A gas turbines, 4,250 hp each; 2 CP props; 50,000 hp max.

Electric: 3,000 kw Range: 4,500/18; 1,200/30

Man: 13 officers, 164 men

Remarks: Designed jointly by Vosper Thornycroft and Yarrow. The ships have been criticized for fragility, vulnerability, and for being overloaded and top-heavy; permanent ballast had to be added, but none can carry the full originally intended weapon and sensor suite. Hulls are being strengthened, due to cracking during the Falklands War; doubler plates added amidships, beginning with F 173, completed 6-83; modifications added 100 + tons to displacement. All are based at Devonport, with F 185 as flagship. F 169, 172 did not receive Exocet until 1984-85. Ships without ASW TT have 4 single 20-mm AA.

Remote control of engine room from the bridge. Supplies on board for 60 days. Ferranti WSA 4 digital system used in fire control, employing two Selenia RTN-10X radar directors (Type 912) for both Sea Cat and the 114-mm gun; there is also a backup optical director for each. The CAAIS combat data system is a separate entity, whose data are automatically transmitted to WSA 4; both use a single FM-1600B computer. The Exocet launchers are paired, toed-in, and forward of the bridge. All can carry two SCOT radomes for the Skynet SHF communications satellite system. Four 750-kw diesel generator sets supply the 450-volt, 3-phase, 60-Hz electrical current. Type 992Q radar to be replaced by Type 996. A separate Cossor Type 1010 IFF interrogator is mounted below the Type 992Q.

Ardent (F 184) of this class was lost to multiple bomb and rocket hits 21-5-82, and Antelope (F 170) sank 24-5-82 after an unexploded bomb detonated, causing uncon-

trolled fires and eventual magazine explosions.

23 Leander class

Note: For convenience in describing the numerous appearances and functional variations in this class, they have been divided into six separate listings, in general order of construction and conversion:

♦ (a) 5 Sea Wolf antiaircraft missile conversions

| | Bldr | Laid down | L | In serv. | Conv. |
|----------------|-------------------|-----------|---------|----------|----------|
| F 57 ANDROMEDA | HMDY/Portsmouth | 25-5-66 | 24-5-67 | 2-12-68 | 4-81 |
| F 58 HERMIONE | Stephen/Yarrow | 6-12-65 | 26-4-67 | 11-7-69 | 21-6-83 |
| F 60 JUPITER | Yarrow, Scotstoun | 3-10-66 | 4-9-67 | 9-8-69 | 21-10-83 |
| F 71 SCYLLA | HMDY, Devonport | 17-5-67 | 8-8-68 | 12-2-70 | 7-12-84 |
| F 75 CHARYBDIS | Harland & Wolff | 27-1-67 | 28-2-68 | 2-6-69 | 6-8-82 |



Charybdis (F 75)

M.O.D., 3-84



Hermione (F 58) — deckhouse on helo deck, SCOT installed, 20-mm aft L. & L. Van Ginderen, 2-85



Scylla (F 71)

L. & L. Van Ginderen, 5-85



Jupiter (F 60)

L. & L. Van Ginderen, 5-84

D: 2,640 tons (3,100 fl) S: 27 kts

Dim: 113,38 (109.73) × 13.12 × 4.60 (5.60 prop)

A: 4/MM 38 Exocet SSM (I \times 4) — 1/Sea Cat GWS.25 syst. (VI \times 1) — 2 or 3/20-mm AA (I \times 2 or 3) — 6/324-mm STWS.1 ASW TT (III \times 2) — 1/Lynx helicopter (Sea Skua ASM, Stingray torpedoes)

Electron Equipt: Radar: 1/1006, 1/967-968, 1/910

Sonar: Type 2016, Type 2008, Type 162M

EW: UA-A1 passive, 2/Type 690 jammer, 2/Knebworth/ Corvus chaff RL (VIII × 2)

M: 2 sets White-English Electric GT, 2/5-bladed props; 30,000 hp

Boilers: 2 Babcock & Wilcox 3-drum; 38.7 kg/cm², 450°C

Fuel: 500 tons Electric: 2,500 kw Range: approx. 4,500/12

Man: 19 officers, 241 men

Remarks: F 58 launched by Alex Stephens, completed by Yarrow. Conversions from "Broad-beam Leanders" to improve warfare capabilities in all areas. Five sisters not converted, for economy reasons (see below). Sea Wolf, manually loaded launcher and 4 Exocet and twin 144-mm gunmount, hangar enlarged to take Lynx, sonar replaced. Limbo mortar and Type 965 radar deleted, Type 967-968 radar stepped atop new foremast, and Type 910 Sea Wolf director placed atop bridge. All have 2 Mk 4 20-mm mounts; F 58 and F 75 have a GAM-BO1, 20-mm mount to starboard at the stern. F 58 tested Thorn EMI Guardian (Type 675) jammer in 1975.

♦ (b) 4 unmodified "Broad-beamed Leander" general-purpose

| | Bldr | Laid down | T. | In serv. |
|---------------|---|-----------|----------|----------|
| F 12 ACHILLES | Yarrow, Scotstoun | 1-12-67 | 21-11-68 | 9-7-70 |
| | Carl Manual or on the Carl Carl Carl Carl Carl Carl Carl Carl | | 15-4-69 | 2-4-71 |
| F 16 DIOMEDE | Yarrow, Scotstoun | 30-1-68 | | |
| F 70 Apollo | Yarrow, Scotstoun | 1-5-69 | 15-10-70 | 28-5-72 |
| F 72 ARIADNE | Yarrow, Scotstoun | 1-11-69 | 10-9-71 | 10-2-73 |

D: 2,660 tons (3,120 fl) S: 27 kts

Dim: 113.38 (109.73 pp) × 13.12 × 4.50 (5.49 props)

A: 2/114-mm Mk 6 DP (II × 1) — 1/Sea Cat GWS.22 syst. (IV × 1) — 3 or 4/20-mm AA (I × 3; F 16: II × 1, I × 2) — 1/Limbo Mk 10 ASW mortar (III × 1) — 1/Wasp helicopter (AS.12 ASM, Mk 44/46 torpedoes)

Electron Equipt: Radar: 1/978 or 1006, 1/993, 1/965, 1/903, 1/904

Sonar: Type 184, Type 170B, Type 162 EW: UA-8/9 passive, Type 668 or 669 active, 2/Knebworth/ Corvus chaff RL (VIII×2)—F 70, 72 also: UA-13 passive, others: FH-12 HFD/F



Ariadne (F 72) — with UA-13 array at masthead, single 20-mm aft, Wasp on deck L. & L. Van Ginderen, 11-84



Diomede (F 12) - FH-12 at masthead, 20-mm aft

L. & L. Van Ginderen,7-84

M: 2 sets White-English Electric GT; 2/5-bladed props; 30,000 hp Boilers: 2 Babcock & Wilcox 3-drum; 38.7 kg/cm², 450°C Electric: 2,500 kw Fuel: 500 tons Range: Approx. 4,500/12 Man: 19 officers, 241 men

Remarks: The newest of the Royal Navy's Leanders, conversion of these ships to "Sea Wolf Leander" configuration was canceled for reasons of economy. A fifth unmodified "Broad-beam Leander," Bacchante (F 69), was sold to New Zealand 4-10-82. A single Oerlikon GAM-801 20-mm AA gun was mounted on the starboard side of the stern in 1982-83 in F 12, 70, and 72; F 16 received a twin 20-mm mount. F 12 entered major refit 4-6-84, F 70 on 30-7-84, and F 72 early in 1985; all are now to be retained to at least 1989. Type 994 radar may replace the Type 965 array.

• (c) 4 "Exocet Leander" Batch 2TA conversions with towed arrays

| | Bldr | Laid down | L | In serv. | Conv. |
|----------------|----------------------|-----------|---------|----------|-------|
| F 28 CLEOPATRA | HMDY, Devonport | 19-6-63 | 25-3-64 | 4-1-66 | 11-75 |
| F 40 Sirius | HMDY, Portsmouth | 9-8-63 | 22-9-64 | 15-6-66 | 10-77 |
| F 42 Рноеве | Alex Stephens & Sons | 3-6-63 | 8-7-64 | 15-4-66 | 4-77 |
| F 56 Argonaut | Hawthorne Leslie | 27-11-64 | 8-2-66 | 17-8-67 | 10-78 |



Cleopatra (F 28) — towed array without sponson, UA-13 at masthead, SCOT radomes aboard L. & L. Van Ginderen, 8-84



Sirius (F 40)

G. Arra, 1984



Argonaut (F 56)—towed array sponson, FH-12 at masthead, Lynx on deck L. & L. Van Ginderen, 12-84

D: 2,750 tons (3,300 fl) S: 28 kts

Dim: 113.38 (109.73 pp) × 12.50 × 5.00 (6.40 props)

A: 4/MM 38 Exocet (Î×4) — 2 Sea Cat GSW.22 syst. (IV×2—only one director) — 2/20-mm Mk 4 AA (I×2) — 6/324-mm STWS.1 ASW TT (III×2) — 1/Lynx helicopter (Sea Skua ASM, Stingray torpedoes)

Electron Equipt: Radar: 1/1006, 1/993, 1/904

Sonar: Type 184M, Type 162M, Type 2031 (1) towed passive linear array

EW: UA-8/9 passive, Type 668 or 669 active, 2/Knebworth/ Corvus chaff RL (VIII × 2), also: F 28, 42: UA-13; F 40, 56: FH-12 HFD/F

M: 2 sets White-English Electric GT; 2/5-bladed props; 30,000 hp Boilers: 2 Babcock & Wilcox 3-drum; 38.7 kg/cm², 450°C Electric: 1,900 kw Fuel: 460 tons Range: approx. 4,000/12

Man: 20 officers, 203 men

Remarks: Original conversion completion dates in table. These four ships are Typed "Exocet Leander Group 2A" and have been further modified from "Exocet Leander" configuration by the deletion of the forward Sea Cat launcher and director, the lowering of the Exocet installation to the main deck level, the substitution of 20-mm Mk 4 AA for the 40-mm AA, the removal of the Type 965 early-warning radar (replaced by a Cossor Type 1010 IFF interrogator), and the addition o the Type 2031 (1) towed passive linear hydrophone array on the starboard quarter. F 42, completing first in 7-82, mounted 4/20-mm AA while awaiting the Type 2031 equipment; one AA gun was placed atop the former forward director platform and the other on the starboard quarter. F 28, completing reconversion in 1983, had the Type 2031, SCOT SHF SATCOMM antennas, and only 2/20-mm AA, F 56, damaged in the Falklands War, replaced Minerva (F 45) in the towed array conversion program, recommissioning 1984. On all but F 28, the Type 2031 (1) reel/winch is on a sponson projecting to starboard and astern, adding about 1 meter to the overall length.

• (d) 3 "Exocet Leander" Batch 2B conversions

| | Bldr | Laid down | L | In serv. | Conv. |
|---------------------------------|--------------------|-----------|----------|----------|-------|
| F 45 MINERVA | Vickers, Armstrong | 25-7-63 | 19-12-64 | 14-5-66 | 9-79 |
| F 47 DANAE | HMDY, Devonport | 16-12-64 | 31-10-65 | 7-9-67 | 9-80 |
| F 127 PENELOPE (ex-Coventry) | Vickers-Armstrong | 14-3-61 | 17-8-62 | 31-10-63 | 1-82 |



Minerva (F 45)

L. & L. Van Ginderen, 5-85



Penelope (F 127)

L. & L. Van Ginderen, 2-84

D: 2,650 tons (3,200 ft) S: 28 kts Dim: 113.38 (109.73 pp) × 12.50 × 4.80

4/MM 38 Exocet SSM (I \times 4) — 3/Sea Cat GWS.22B syst. (IV \times 3 — 2 directors)—2/40-mm AA (I \times 2)—1/20-mm AA—6/324-mm STWS.1 ASW TT (III \times 2)—1/Lynx helicopter (Sea Skua ASM, Stingray torpedoes)

Electron Equipt: Radar: 1/1006, 1/993, 1/965, 2/904 Sonar: Type 184M, Type 162M EW: UA-8/9 passive, Type 668 or 669 jammer,

2/Knebworth/Corvus chaff RL (VIII × 2), Mk 36 SRBOC (VI × 2), FH-12 HFD/F

M: and Boilers: as in "Exocet Leander" Batch 2A Electric: 1,900 kw Fuel: 460 tons Range: Approx. 4,000/12 Man: 20 officers, 203 men

Remarks: Converted from standard Leander configuration, except for F 127, which reconverted from Sea Wolf trials ship, recommissioning 22-1-82. Sea Cat launcher and 4 Exocet replaced twin 114-mm gun forward, single Sea Cat launcher augmented by a second launcher atop enlarged hangar, Limbo ASW mortar replaced by 2 sets ASW TT. Will not be further altered, as in Batch 2A above. F 47 has a twin 20-mm aft and 2/20-mm GAM-B01 amidships; F 127 substitutes a third GAM-B01 aft. All may receive Type 994 radar in place of Type 965. Have CAAIS combat data system. F 45 is, technically speaking, a "Batch 2A" conversion unit.

♦ (e) 6 "Ikara Leander" conversions

| | Bldr | Laid down | L | In serv. | Conv. |
|--------------------------------|-------------------|-----------|----------|----------|-------|
| F 10 AURORA | John Brown | 1-6-61 | 28-11-62 | 9-4-64 | 3-76 |
| F 15 Euryalus | Scotts SB&E | 2-11-61 | 6-6-63 | 16-9-64 | 3-76 |
| F 18 GALATEA | Swan Hunter | 29-12-61 | 23-5-63 | 25-4-64 | 9-74 |
| F 38 ARETHUSA | J. Samuel White | 7-9-62 | 5-11-63 | 24-11-65 | 4-77 |
| F 39 NAIAD | Yarrow, Scotstoun | 30-10-62 | 4-11-63 | 15-3-65 | 7-75 |
| F 109 Leander (ex-Weymouth) | Harland & Wolff | 10-4-59 | 28-6-61 | 27-3-63 | 12-72 |



Arethusa (F 38) - Wasp helo on deck, SCOT radomes aboard

L. & L. Van Ginderen, 7-84



Leander (F 109)

L. & L. Van Ginderen, 12-84



Euryalus (F 15) - Ikara on launcher

Royal Navy, 1982

D: 2,610 tons (3,020 ft) S: 27 kts Dim: 113.38(109.73 pp) × 12.50 × 4.60 (5.70 props)

A: 2/Sea Cat GWS.22B syst. (IV \times 2, 1 director) — 2/40-mm AA (I \times 2) — F 10, F 18: 1/20-mm AA — 1/Ikara GWS.40 syst. (I \times 1) — 1/Limbo Mk 10 ASW mortar (III × 1) -1/Wasp helicopter (AS.12 ASM, Mk 44/46 torpedoes)

Electron Equipt: Radar: 1/1006, 1/994, 1/904, 1/Ikara tracker Sonar: Type 170B, Type 184M, Type 162M

EW: UA-8/9 passive, Type 668/669 jammers, 2/Knebworth/Corvus chaff RL (VIII \times 2)

M: 2 sets White-English Electric GT; 2/5-bladed props; 30,000 hp Boilers: 2 Babcock & Wilcox 3-drum, 38.7 kg/cm2, 450°C

Electric: 2,000 kw Fuel: 460 tons Range: approx. 4,500/12

Man: 19 officers, 238 men

Remarks: Conversions from standard Leanders, with the Australian ASW torpedocarrying Ikara antisubmarine cruise-missile system replacing the twin 114-mm gunmount, the number of Sea Cat launchers doubled, and the Type 965 radar removed (necessitating the installation of a Type 1010 IFF interrogation antenna atop the after pylon mast). Fitted for 2 SCOT antennas for the Skynet SHF SATCOMM system on platforms on the foremast. Two ships to date have had a 20-mm AA added on the starboard quarter. Retention of Limbo limits flight deck to Wasp helicopter. Sister Dido (F 104) sold to New Zealand, transferring 18-7-83. The Ajax (F 114) was stricken 31-5-85; the ship is to be used as a Harbour Training hulk at Plymouth. Have ADAWS 5 data system and LINK 10 data link. Type 994 radar (Plessey ASW.4 with Type 993's antenna retained) has replaced Type 993 in the survivors, and Type 199 VDS has been removed.

• (f) 1 unmodified Leander

Laid down In serv. Thornycroft, Woolston 16-7-74 24-11-65 18-7-67 F 52 Juno



Juno (F 52)

L. & L. Van Ginderen, 4-85

D: 2,400 tons (2,800 fl) S: 28 kts Dim: 113.38 (109.73 pp) × 12.50 × 4.40 (5.4

A: 2/20-mm Mk 4 AA (I \times 2) - 6/324-mm STWS.1 ASW TT (III \times 2) - 1/Wasp helicopter

Electron Equipt: Radar: 1/1006, 1/994

Sonar: Type 184M, Type 162 EW: . . . passive, 2/Knebworth/Corvus chaff RL (VIII \times 2) M: and Boilers: as for "Ikara Leander" class

Electric: 1,600 kw Fuel: 460 tons Range: approx. 4,500/12

Man: 17 officers, 245 men

Remarks: Juno was the last unmodified early Leander. She entered refit 9-81 at Rosyth for conversion as a navigational training ship to replace Torquay in 3-84. Economics forced delay of the plan, and the ship was given a regular overhaul ending in 10-82 and placed in ready reserve; in 1984-85 the work was completed: the 114-mm mount, Limbo mortar, and Sea Cat systems removed, Type 965 radar and most EW equipment deleted; ASW TT, new navigational gear, and Type 1010 IFF interrogation

General Remarks: (Leander class): The design is an improvement on the Rothesay class, of which Dido (F 104), F 109, F 114, and F 127 were originally to have been members. Have twin rudders and one pair of fin stabilizers, set well aft of amidships. The "Broad-beamed Leanders" incorporated engineering plant improvements and

were the first to be fitted with Sea Cat missiles on completion, earlier ships having had 2/40-mm AA (I × 2). All were intended to carry Type 199 variable-depth sonars, but these were never installed in many of the class.

Note: The three "Tribal"-class frigates recommissioned in 1982 for the Falklands conflict have been stricken and sold to Indonesia; Gurkha (F 122) and Zulu (F 124) decommissioned 30-3-84, and Tartar (F 133) on 29-3-84.

♦ 2 Rothesay class (Type 12)

| | Bldr | Laid down | L | In serv. |
|----------------|-------------------|-----------|---------|----------|
| F 101 YARMOUTH | John Brown | 29-11-57 | 23-3-59 | 26-3-60 |
| F 107 Rothesay | Yarrow, Scotstoun | 6-11-56 | 9-12-57 | 23-4-60 |



Yarmouth (F 101)

Maritime Photographic, 8-85



Rothesay (F 107)

L. & L. Van Ginderen, 7-85

D: 2,380 tons (2,800 fl) S: 26 kts

Dim: 112.78 (109.73 pp) \times 12.5 \times 4.50 (5.30 sonar) A: 2/114-mm Mk 6 DP (II \times 1) — 2/20-mm AA (I \times 2) — 1/Sea Cat GWS.20 system (IV × 1) - 1/Mk 10 Limbo ASW mortar (III × 1) - 1/Wasp helicopter (AS.12 ASM, Mk 44/46 torpedoes)

Electron Equipt: Radar: 1/1006, 1/993, 1/903 Sonar: 1/174, 1/170B, 1/162M

EW: FH-5 HFD/F 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 2 sets English Electric GT; 2 props; 30,000 hp

Electric: 1,460 kw Boilers: 2 Babcock & Wilcox, 38.7 kg/cm2, 450°C

Fuel: 400 tons Range: 4,500/12

Man: 155 officers, 220 men

Remarks: Improved version of the Whitby class. Original nine ships all modernized 1966-72 with Sea Cat GWS.20 system (no radar) and helicopter facility in place of one Limbo ASW mortar. MRS.3 fire-control system replaced the original Mk 6 director, and new electronics and air-conditioning were installed.

F 107 completed refit 11-84 to extend service to 1988. F 101 likely to strike 1986-87. Of seven sisters, Brighton (F 106) was stricken 1-81. Falmouth (F 113), in reserve 7-80 and stricken 12-81, was recommissioned 23-4-82 for Falklands service and was decommissioned 27-11-84 for harbor training service. Rhyl (F 129), on Sales List since 2-82, recommissioned 18-6-82 and was stricken 2-85. Lowestoft (F 103), used for trials with towed passive linear hydrophone arrays since 1978, first with DA-5 and later with Type 2031, paid off for disposal 29-3-85. Londonderry (F 108), a disarmed and electronics trials ship since recommissioning from conversion 11-10-79, was paid off 29-3-84 for use by HMS Sultan as a training hulk. Plymouth (F 126) was due for disposal by end-1985, and Berwick (F 115), placed in reserve 1-81, stricken 12-81, recommissioned 5-8-82, was stricken 17-10-85.

Note: The last Whitby-class frigate, Torquay (F 43), was replaced as cadet navigational and tactical training ship by Juno (F 52) and paid off 31-3-85.

CORVETTES

Note: Plans to acquire an OPV 3 (Offshore Patrol Vessel, Mk 3) design were placed in abeyance 6-85, although design work will continue. The Royal Navy may instead lease a vessel (or airship) to perform this function.

Bldr: Hall Russell, Aberdeen • 5 Peacock class

| | Laid down | L | In serv |
|----------------|-----------|---------|----------|
| P 239 Peacock | 29-1-82 | 1-12-82 | 12-10-83 |
| P 240 PLOVER | 13-5-82 | 12-4-83 | 20-7-84 |
| P 241 Starling | 9-9-82 | 7-9-83 | 10-8-84 |
| P 242 SWALLOW | 24-4-83 | 30-3-84 | 16-11-84 |
| P 243 Swift | 23-9-83 | 11-9-84 | 3-5-85 |



Swallow (P 242)

L. & L. Van Ginderen, 11-84



Swift (P 243) -on trials

Walles Foto, 3-85

D: 662 tons (fl) S: over 28 kts (trials)

Dim: 62.60 (60.00 pp) × 10.00 × 2.72 A: 1/76-mm OTO Melara Compact DP — 4/7.62-mm mg (I × 4)

Electron Equipt: Radar: 1/1006 M: 2 APE-Crossley SEMT-Pielstick 18PA6V280 diesels; 2/3-bladed props;

14,188 hp-1/Schöttel S103 LSVEST drop-down, shrouded loiter prop; 181 hp

Range: 2,500/. . . Fuel: 44 tons Electric: 755 kw

Man: 4 officers, 6 chief petty officers, 21 men

REMARKS: Replaced the five "Ton"-class former minesweepers used for patrol duties at Hong Kong, whose government has paid 75 percent of the construction costs. Carry two Avon Sea Raider 5.4-m, 30-kt, 10-man semi-rigid rubber inspection dinghies. Some 450 rds. 76-mm ammunitions can be carried, with the gun controlled by a GSA7 Sea Archer Mk 1 electro-optical director. The auxiliary drive employs a Schöttel retractable, steerable shrouded thruster. Accommodations for 44 total. Have 2/50mm rocket flare projectors. Maximum sustained speed: 25 kts. Two rudders. Reported to be bad rollers, with deeper bilge keels having had to be mounted. Propulsion problems occurred with P 139.

♦ 2 "Castle"-class offshore patrol vessels Bldr: Hall Russell, Aberdeen

| | Laid down | L | In serv |
|------------------------|-----------|----------|---------|
| P 258 LEEDS CASTLE | 18-10-79 | 22-10-80 | 12-81 |
| P 265 DUMBARTON CASTLE | 25-6-80 | 3-6-81 | 12-3-82 |

D: 1,250 tons (1,450 fl) S: 20 kts Dim: 81.0 (75.0 pp) × 11.5 × 3.42 A: 1/40-mm AA - 2/7.62-mm mg (I × 2) - mines - helicopter platform

Electron Equipt: Radar: 1/1006

M: 2 Ruston 12 RK 320DM diesels; 2 CP props; 5,640 hp (4,380 sust.) Electric: 890 kw Fuel: 380 tons Range: 10,000/12

Man: 7 officers, 43 men (plus 25 Marine detachment as required)

Remarks: Ordered 8-8-80, after both had been laid down. P 265 operated at over 2,000 tons displacement during the Falklands War. Carry acoustic and mechanical minesweeping gear as well as being able to lay mines. The helicopter deck is large enough to accommodate either Lynx or Sea King helicopter. Carry two 50-mm rocket flare launchers. Can carry 19.5 tons helicopter fuel and 30 tons of oil-spill dispersart detergent. Have Decca CANE-2 (Computer-Assisted Navigation Equipt.) NAVSAT, and Omega systems. Two Avon "Sea Raider" rubber rescue/inspection dinghies car-

CORVETTES (continued)



Leeds Castle (P 258) — MARISAT SATCOMM antenna fitted, inspection boat at the ready Skyfotos, 10-83



Dumbarton Castle (P 265)

L. & L. Van Ginderen, 3-84

ried. Have one fire monitor and two oil-dispersing spray booms. Intended for 21-day patrols. P 258, equipped with MARISAT, conducted minelaying trials in mid-1983. P 258's 40-mm gun relocated to improve firing arcs, 1985.

◆ 7 Isles-class offshore patrol vessels Bldr: Hall Russell, Aberdeen

| | L | In serv. | | L | In serv. |
|----------------|----------|----------|-------------------|----------|----------|
| P 277 ANGLESEY | 18-10-78 | 1-6-79 | P 298 SHETLAND | 22-11-76 | 14-7-77 |
| P 278 ALDERNEY | 27-2-79 | 6-10-79 | P 299 ORKNEY | 29-6-76 | 25-2-77 |
| P 295 Jersey | 18-3-76 | 15-10-76 | P 300 LINDISFARNE | 1-6-77 | 26-1-78 |
| P 297 GUERNSEY | 17-2-77 | 28-10-77 | | | |



Jersey (P 295)

L. & L. Van Ginderen, 2-85



Alderney (P 278)

G. Gyssels, 3-84

D: 1,000 tons (1,280 fl) S: 16.5 kts Dim: 61.10 (51.97 pp) \times 11.00 \times 4.27 A: 1/40-mm AA Mk 3—2/7.62-mm mg (I \times 2)

Electron Equipt: Radar: 1/1006—Sonar: 1/Simrad SU "Sidescan" M: 2 Ruston 12 RK 3 CM diesels (750 rpm); 1/CP prop; 4,380 hp

Electric: 536 kw Fuel: 310 tons Range: 11,000/12 Man: 5 officers, 29 men (plus Marine detachment)

Remarks: Near duplicates of the Scottish Department of Fisheries ships Jura and Westra. Jura (as P 296) was loaned to the Royal Navy from 1975 to 1-77 for use in patrolling offshore oil rigs and the 200-nautical-mile economic zone, the purpose for which the "Isles" class were built. First five ordered 11-2-75, other pair 21-10-77. P 277 and P 278 had fin stabilizers on completion, back-fitted in the others. Can maintain 12-15 kts in a Force 8 gale. Have Decca CANES-2 Navaid. Avon Sea Raider semi-rigid dinghies are replacing the original Geminies for inspection purposes. Carry 28.6 tons detergent (a 6-hr. supply) for oil-spill cleanup.

1 Falkland Islands support ship, former oilfield supply tug

P 246 SENTINEL (ex-Seaforth Husumer SY, Husumer, 1975 27-6-75 Warrior, ex-Edda Sun) W. Germany (14-1-84 RN)



Sentinel (P 246) leaving for Falklands

L. & L. Van Ginderen, 2-84

D: 1,100 tons (fl) S: 14 kts Dim: 60.50 (52.80 pp) × 13.00 × 4.50

A: 2/40-mm Mk 9 AA (I×2) -3/7.62-mm mg (I×3)

Electron Equipt: Radar: 2/Krupp-Atlas nav.

M: 2 MaK 12M453 A4 diesels; 2 Kort-nozzle CP props; 7,760 hp

Electric: 692 kVA Man: 26 tot.

Remarks: 934 grt/733 dwt tug purchased 3-83 for service as patrol ship, supply ship, and moorings tender for duty in the Falkland Islands. Two Becker flapped rudders, 500-hp bow-thruster, 150-ton towing winch, 87-ton bollard pull. Two 50-mm rocket flare projectors, enhanced communications suite and two SeaRaider semi-rigid boats with electrohydraulic derrick added.

2 Falkland Islands support ships, former oilfield supply tugs



Protector (P 244)

C. & S. Taylor, 8-83

CORVETTES (continued)



Guardian (P 245)

L. & L. Van Ginderen, 9-83

D: 1,000 tons (fl) **S:** 13.5 kts **Dim:** $58.83 \times 12.04 \times 4.52$ **A:** 2/40-mm Mk 9 AA (I × 2) -3/7.62-mm mg (I × 3)

Electron Equipt: Radar: 1/. . . nav.

M: 2 British Polar U-16 diesels; 2 Kort-nozzle CP props; 6,160 hp

Man: 26 tot.

Remarks: 802-grt oilfield tugs purchased 3-83 for use in the Falkland Islands and converted by Commercial Dry Dock Enterprises, Cardiff. Crews rotate to U.K. every six months; P 244 acts as flagship. P 246 is 58.48 m overall. Bow-thrusters in both. Two SeaRaider semi-rigid inspection boats, 2/50-mm flare launchers, and an electrohydraulic derrick added. Can be distinguished from Sentinel (P 246) by greater distance between paired stacks and the pilothouse. Have two firefighting water monitors.

Note: The five "Ton"-class minesweepers converted as Hong Kong patrol boats have been replaced by the *Peacock* class. *Beachampton* (P 1007) was stricken 1984; *Monkton* (P 1055), *Wasperton* (P 1089), and *Yarnton* (P 1096) were placed on the Sales List 4-85, while *Wolverton* (P 1093) was stricken later in the same year.

PATROL BOATS

◆ 5 Kingfisher class
Berwick-on-Tweed)

Bldr: Richard Dunston, Hessle (P 259: Fairmile Const.,

| | Laid down | L | In serv. |
|----------------------------------|-----------|----------|----------|
| P 259 REDPOLE (ex-RAF Sea Otter) | | | 1970 |
| P 260 Kingfisher | 7-73 | 20-9-74 | 8-10-75 |
| P 261 CYGNET | 10-73 | 26-10-75 | 8-7-76 |
| P 262 Peterel | 11-73 | 14-5-76 | 7-7-77 |
| P 263 SANDPIPER | 12-73 | 20-1-77 | 16-9-77 |



Peterel (P 262)

L. & L. Van Ginderen, 5-85

D: 187 tons S: 25 kts Dim: 36.6 (33.8 pp) × 7.0 × 2.0

A: 1/40-mm AA — 2/7.62-mm mg (I × 2)

M: 2 Paxman 16 YCJM diesels (1,500 rpm); 2 props; 4,000 hp

Range: 2,000/14 Man: 4 officers, 10 men

Remarks: Unsuccessful design based on RAF Seal-class air-sea-rescue craft. P 259 was transferred to the RN 30-10-84 and towed to Brooke Marine, Lowestoft, 2-2-85 for refit, arming, and conversion to naval standard. A large number of additional sisters were canceled. P 262 and P 263 are used for naval officer training at Dartmouth; P 260 and P 261 were employed in patrol work in the North Sea, but have been reassigned as tenders to the mine countermeasures squadron at Rosyth. Have fin stabilizers, but evidently still have stability problems. Only P 260 has hull portholes; P 262 and P 263 have enclosed pilothouses.

PATROL CRAFT

| ♦ 14 P.2000 class | Bldr: Watercraft, Shoreham-by-Sea | | | | | |
|-------------------|-----------------------------------|-----------------|----------|--|--|--|
| | In serv. | | In serv. | | | |
| A 153 Example | 18-10-85 | P 273 Pursuer | | | | |
| A 154 EXPLORER | | P 279 Blazer | | | | |
| A 163 Express | | P 280 Dasher | | | | |
| A 167 EXPLOIT | 86 | P 291 Puncher | | | | |
| P 264 ARCHER | 9-8-85 | P 292 Charger | | | | |
| P 270 BITER | | P 293 RANGER | | | | |
| P 272 SMITER | | P 294 Trumpeter | | | | |



Example (A 153) - RNXS unit

Maritime Photographic, 10-85

D: 38 tons (1/2 load)
 S: 33 kts
 Dim: 20.80 (18.00 pp) × 5.80 × 1.52
 A: 1/20-mm AA (fitted for)
 Electron Equipt: Radar: 1/. . . nav.
 M: 2 CV12 M800 T diesels; 2 props; 1,640 hp

Range: 620/. . . Man: 11 tot.

Remarks: Glass-reinforced plastic craft ordered 7-84, primarily for peacetime training: 6 are for Royal Navy Reserve training, 4 for the Universities of Glasgow, Liverpool, Southampton, and Aberdeen, and the last 4 with "A" pendants for the Royal Naval Auxiliary Service.

• 5 Tracker Mk, Mk I and II class
Hamble

Bldr: Fairey Allday Marine, Cowes and

| | In serv. | | In serv. |
|----------------|----------|---------------|----------|
| P 281 ATTACKER | 11-3-83 | P 284 HUNTER | 21-3-83 |
| P 282 CHASER | 11-3-83 | P 285 STRIKER | 7-83 |
| P 983 FENCER | 21-3-83 | | |



Hunter (P 284)

L. & L. Van Ginderen, 8-84

D: 31 tons (34.5 fl) S: 21 kts Dim: 20.0 (19.3 pp) × 5.18 × 1.45 A: 1/20-mm AA (fitted for) Electron Equipt: Radar: 1/Decca 150 M: 2/G.M. 12V71 TI diesels; 2 props; 1,300 hp Range: 650/20 Man: 3 officers, 2 petty officers, 6 men Electric: 30 kw

Remarks: Glass-reinforced plastic craft procured primarily for reserve training duties, with a wartime local patrol function. P 281 operates from HMS *Graham* for the Clyde Division, RNR: P 282 operates for the Tay Div., RNR; P 283 operates from HMS *President* for the London Div., RNR; and P 284 operates from HMS *Solent* for the London Div., RNR. P 281, built at Cowes, is a Tracker Mk I with an open lattice mast; the others, built at Hamble, have "solid" masts. Speed with engine governors lifted: 24 kts.

♦ 2 "Loyal" class H

Bldr: Richard Dunston, Thorne

In serv.

P 252 ALERT (ex-Loyal Governor, A 510) 1975 P 254 Vigilant (ex-Loyal Factor, A 382) 1974

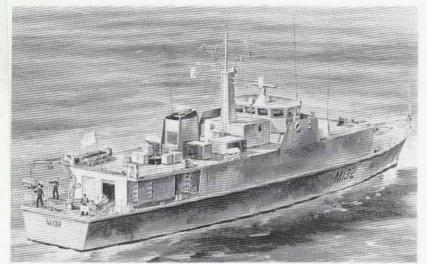
Remarks: For data, see under "Loyal"-class general-purpose tenders. Operate with RN crews patrolling local waters off Ulster.

Note: Ex-RAF patrol boats Sunderland and Stirling acquired 8-85 for duties at Gibraltar as Hart (P 257) and Cormorant (P 256); see page 221, Spitfire class, for details.

MINE WARFARE SHIPS

♦ 0 (+1+19) "Single-Role Minehunter" (SRMH) design

Laid down L In serv. Vosper Thornycroft, M 132 SANDOWN . . . Portchester



Single-Role Minehunter - artist's impression

Vosper Thornycroft, 1984

D: 450 tons (fl) S: 15 kts Dim: 50.0 × 9.5 (9.0 waterline) × 2.1

A: 1/30-mm Rarden L530B AA

Electron Equipt: Radar: 1/1007 - Sonar: 1/2093

M: 2 Paxman Valenta 6RP 200E diesels; 2 Voith-Schneider vertical cycloidal props; 3,000 hp -2 bow-thrusters

Electric: . . . kw (3 diesel sets) Man: 7 officers, 33 men

Range: . . . / . . .

Remarks: First unit ordered 28-8-85 for a design contracted to Vosper in 1983. Glassreinforced plastic construction. Will use electric drive for low-speed, quiet operation. Plessey's Type 2093 sonar uses a variable-depth vertical lozenge-shaped towed body lowered beneath the hull; it has search, height-finder, classification, and route survey modes. The ships will carry two Remote-Controlled Mine Disposal System Mk 2 (improved PAP 104) submersibles for identification and disposal and will carry a mine clearance diver team. Capable of dealing with mines to 200-m depths. Will replace "Ton"-class minehunters.

7 (+5) "River"-class "Extra Deep Armed Team Sweeps"

(MSM/EDATS) Bldr: Richards (Shipbuilders) Ltd.; Lowestoft (L) or Great Yarmouth (G)

| | Bldr. | Laid down | L | In serv. | Station |
|-------------------|-------|-----------|----------|----------|----------|
| M 2003 WAVENEY | L | 31-10-83 | 8-9-83 | 29-9-84 | S. Wales |
| (ex-Amethyst) | | | | | |
| M 2004 CARRON | G | 21-2-83 | 23-9-83 | 29-9-84 | Severn |
| M 2005 Dovey | G | 3-3-83 | 1-12-83 | 30-3-85 | Clyde |
| M 2006 HELFORD | G | 12-10-83 | 16-5-84 | -85 | Ulster |
| M 2007 Humber | G | 21-10-83 | 17-5-84 | 7-6-85 | London |
| M 2008 BLACKWATER | G | 16-1-84 | 29-8-84 | 17-6-85 | RN |
| M 2009 ITCHEN | L | 26-3-84 | 16-11-84 | 12-10-85 | Solent |
| M 2010 HELMSDALE | L | 21-5-84 | 11-1-85 | -86 | Tay |
| M 2011 ORWELL | G | 4-6-84 | 7-2-85 | -86 | Tyne |
| M 2012 RIBBLE | G | 17-9-84 | 7-5-85 | -86 | Mersey |
| M 2013 SPEY | L | 12-11-84 | 22-5-85 | -86 | Forth |
| M 2014 ARUN | L | -85 | 20-8-85 | -86 | Sussex |



Humber (M 2007)

L. & L. Van Ginderen, 4-85



Dovey (M 2005)

Walles Foto, 2-85



Waveney (M 2003)

C. & S. Taylor, 1984

D: 770 tons (fl) S: 14 kts (15 on trials) Dim: 47.60 (42.00 pp) × 10.50 × 3.10 (3.75 max.) A: 1/40-mm Mk 3 AA — 2/7.62-mm mg (I × 2)

M: 2 Ruston 6 RKCM diesels; 2 4-bladed CP props; 3,040 hp

Range: 4,500/10 Fuel: 88 tons Electric: 460 kw Man: 7 officers, 7 petty officers, 16 men

Remarks: 638 grt. First four ordered 27-9-83, next six in 5-83, and last two on 25-2-84, to form the 10 Mine Countermeasures Squadron. Built to commercial standards, following the design of a North Sea oilfield supply vessel. Single-compartment damage standard. Intended to work in pairs, operating the BAJ-Vickers Wire Sweep Mk 9 Team Sweep System, essentially a wire catenary stretched between the ships. Navigation gear includes 2 Kelvin Hughes MS 48 echo-sounders, Decca QM 14 (1), Decca Hifix Mk 6, and a satellite navigation receiver. All manned by Royal Naval Reserve personnel, except M 2007, used by RN for training. Announced 1985 that 12 more may

♦ 9 (+4+2) "Hunt"-class minehunters

| | Bldr | Laid down | L | In serv. |
|-------------------|--------------------|-----------|---------|----------|
| M 29 Brecon | Vosper Thornycroft | 15-9-75 | 21-6-78 | 21-3-80 |
| M 30 LEDBURY | Vosper Thornycroft | 5-10-77 | 5-12-79 | 11-6-81 |
| M 31 CATTISTOCK | Vosper Thornycroft | 20-6-79 | 22-1-81 | 16-6-82 |
| M 32 Cottesmore | Yarrow, Scotstoun | 27-9-79 | 9-2-82 | 24-6-83 |
| M 33 Brocklesby | Vosper Thornycroft | 8-5-80 | 12-1-82 | 3-2-83 |
| M 34 MIDDLETON | Yarrow, Scotstoun | 1-7-80 | 27-4-83 | 15-8-84 |
| M 35 DULVERTON | Vosper Thornycroft | 1-6-81 | 3-11-82 | 4-11-83 |
| M 36 ATHERSTONE | Vosper Thornycroft | 2-1-85 | | 1986 |
| M 37 CHIDDINGFOLD | Vosper Thornycroft | | 6-10-83 | 26-10-84 |
| M 38 Bicester | Vosper Thornycroft | 9-1-84 | 4-6-85 | 1987 |
| M 39 Hurworth | Vosper Thornycroft | 1-83 | 25-9-84 | 19-7-85 |
| M 40 N | Vosper Thornycroft | | | 1988 |
| M 41 N | Vosper Thornycroft | | | |
| M 42 N | | | 4 4 4 | |
| M 43 N | | 274 W | | 2.2.4 |
| | | | | |

D: 625 tons (725 fl) **S:** 17 kts **Dim:** 60.0 (56.6 pp) \times 9.85 \times 2.2

A: 1/40-mm Mk 9 AA

Electron Equipt: Radar: 1/1006-Sonar: 1/193M Mod.1

M: 2 Ruston-Paxman Deltic 9-59K diesels (1,600 rpm); 2 props; 1,900 hp (1,770 sust.); slow-speed hydraulic drive for hunting (8 kts) - bow-thruster

Electric: 1,140 kw (3 Foden FD 12 Mk 7 diesel alternators of 200 kw each for ship's service plus one 480-kw Deltic 9-55B diesel alternator for magnetic minesweeping and 1/60-kw emergency set)

Man: 6 officers, 39 men

MINE WARFARE SHIPS (continued)



Hurworth (M 39)

L. & L. Van Ginderen, 7-85



Chiddingfold (M 37)

L. & L. Van Ginderen, 7-84



Ledbury (M 30)

M. Louagie, 3-85

Remarks: Equipped for both hunting and sweeping mines. Hull constructed of glass-reinforced plastic. Carry 6 or 7 divers and 2 French PAP 104 wire-guided, remote-controlled mine locators. Have Sperry "Osborn" TA 6 acoustic, M.M. Mk 11 magnetic loop and M. Mk 3 Mod. 2 Orepesa wire sweeping gear as well. Equipped with CAAIS data system and Decca Mk 21 "Hi-Fix" navigation system. M 33 laid down prior to ordering on 19-6-80. Twelfth and thirteenth ordered 4-6-85.

• 1 prototype glass-reinforced plastic minehunter croft

Bldr: Vosper Thorny-

Or M 1116 Wilton 11

Ordered L In serv. 11-2-70 18-2-72 25-4-73

D: 450 tons (fl) S: 15 kts Dim: 46.33 × 8.76 × 2.6 A: 1/40-mm AA Mk 7 M: As for "Ton" class Man: 5 officers, 32 men

Remarks: First large warship with an all-glass-reinforced plastic hull. Machinery and fittings are from *Derriton*, scrapped in 1970. Two 6-tubed chaff launchers added 1984.



Wilton (M 1116)

L. & L. Van Ginderen, 1-85

♦ 14 "Ton"-class minehunters

| | Bldr | Laid down | L | In serv. |
|--------------------|--------------------------|-----------|----------|----------|
| M 1110 BILDESTON | J.S. Doig, Grimsby | 18-5-51 | 9-6-52 | 28-4-53 |
| M 1113 Brereton* | Richard Ironworks | 25-9-51 | 14-45-53 | 9-7-54 |
| M 1114 Brinton | Cook, Welton & Gemmell | 30-5-51 | 8-8-52 | 4-3-54 |
| M 1115 Bronington | Cook, Welton & Gemmell | 30-5-51 | 19-3-53 | 4-6-54 |
| M 1133 Bossington | J.I. Thornycroft | 1-9-54 | 2-12-55 | 11-12-56 |
| M 1140 GAVINTON | J.S. Doig, Grimsby | 29-9-52 | 27-7-53 | 12-7-54 |
| M 1147 Hubberston | Fleetlands SY, London | 29-1-53 | 14-9-54 | 14-10-55 |
| M 1151 IVESTON | Philip & Son, Dartmouth | 22-10-52 | 1-6-54 | 20-6-55 |
| M 1153 Kedleston* | Wm. Pickersgill & Son | 26-11-52 | 21-12-53 | 2-7-55 |
| M 1154 Kellington* | Wm. Pickersgill & Son | 5-1-54 | 12-10-54 | 4-11-55 |
| M 1157 Kirkliston | Harland & Wolff, Belfast | 2-2-53 | 18-2-54 | 21-8-54 |
| M 1165 MAXTON | Harland & Wolff, Belfast | 23-5-55 | 24-5-56 | 19-2-57 |
| M 1166 NURTON | Harland & Wolff, Belfast | 31-8-55 | 22-10-56 | 21-8-57 |
| M 1181 Sheraton | White's SY, Southhampton | 23-2-54 | 20-7-55 | 24-8-56 |

* Reserve Training—to be replaced by "River" class in that role.



Bossington (M 1133) — minehunter, with chaff launchers at after end of forecastle L. & L. Van Ginderen, 11-84

• 9 "Ton"-class minesweepers

| | Bldr | Laid down | L | In serv. |
|--------------------------------|-------------------------|-----------|----------|----------|
| M 1103 Alfriston‡ | J. I. Thornycroft | 16-8-51 | 29-4-53 | 16-3-54 |
| M 1109 BICKINGTON [†] | White's SY, Southampton | 21-9-51 | 14-5-53 | 27-5-54 |
| M 1124 CRICHTON† | J. S. Doig, Grimsby | 21-4-52 | 17-3-53 | 23-4-54 |
| M 1125 Cuxton‡ | Camper & Nicholson's | 23-7-52 | 4-11-53 | 13-10-54 |
| M 1146 HODGESTON‡ | Fleetlands SY, London | 22-9-52 | 6-4-54 | 17-12-54 |
| M 1187 UPTON‡ | J. I. Thornycroft | 14-2-55 | 15-3-56 | 24-7-56 |
| M 1188 WALKERTONT | J. I. Thornycroft | 4-7-55 | 21-11-56 | 10-1-58 |
| M 1200 Soberton† | Fleetlands SY, Gosport | 11-3-55 | 20-11-56 | 17-9-57 |
| M 1204 Stubbington† | Camper & Nicholson's | 26-10-54 | 8-8-56 | 30-7-57 |

† Coastal Division, Fisheries Protection Squadron; ‡ Reserve Training



Bickington (M 1109) - Fisheries Protection minesweeper

L. & L. Van Ginderen, 2-85

MINE WARFARE SHIPS (continued)



Walkerton (M 1188) - Fisheries Protection minesweeper

L. & L. Van Ginderen, 1-85

D: 370 tons (425 fl) S: 15 kts (cruising) Dim: 46.33 (42.68 pp) × 8.76 × 2.50

A: 1/40-mm Mk 7 AA

Electron Equipt: Radar: 1/978 — Sonar: 1/193 (hunters only)

M: 2 Paxman Deltic 18A-7A diesels; 2 props; 3,000 hp

Fuel: 43 tons (minehunters: 36 tons) Range: 3,000/8; 2,300/13

Man: 5 officers, 33 men (sweepers: 24 men)

Remarks: Survivors of a class of 118 completed 1952-58. All minehunters are equipped with active rudders for low-speed operations, have a Type 193 sonar, and carry mineclearance divers. The minehunter conversions were completed 1964-69.

All have wooden hulls, sheathed with nylon below the waterline. Fin stabilizers are fitted. M 1125 was first commissioned 10-75, having gone into reserve on completion in 1953. Some (but not all) fisheries protection units have a searchlight aft.

The minehunters are being refitted for retention until the new "Single-Role Minehunters" are ready; 6-tubed chaff rocket launchers are being fitted on the forecastle, just forward of the break. Minesweepers M 1109, M 1125, M 1187, and M 1204 in refit 1984 and 1985. Wotton (M 1195) and Crofton (M 1216) decommissioned to Sales List in 1984, and Pollington (M 1173), Shavington (M 1180), and Lewiston (M 1208) in 1985.

Note: Trials Royal Naval Reserve Extra-Deep Armed Team Sweeps" St. Davids (M 07, ex-Suffolk Monarch) and Venturer (M 08, ex-Suffolk Harvester) were decommissioned 12-7-84 and returned to their owner. BH-N7 Wellington-class air-cushion vehicle P 235 was to be disposed of in 1985.

MINE COUNTERMEASURES SUPPORT SHIP

• 1 exercise minelayer and tender

Bldr Laid down L In serv.
N 21 Abdiel Thornycroft, Woolston 23-5-66 22-1-67 17-10-67



Abdiel (N 21) - note two mineports

L. & L. Van Ginderen, 6-84

D: 1,375 tons (1,460 fl) S: 16 kts Dim: 80.42 (74.67 pp) × 11.74 × 2.85 A: 1/40-mm Mk 7 AA—44 mines Electron Equipt: Radar: 1/1006 M: 2 Paxman Ventura 16-YSCM diesels; 2 props; 2,690 hp Electric: 1,225 kw Man: 8 officers, 90 men

Remarks: Carries and repairs spare sweeping equipment and cable. Used primarily as an exercise minelayer, using two mine ports at the stern. Gun added 1984.

Note: During the 1984 incident where the Libyan roll-on/roll-off cargo ship Ghat mined the Red Sea, Royal Navy minehunters Wilton (M 1116), Brinton (M 1114), Gavinton (M 1140) and Kirkliston (M 1157) were assisted in their duties by the

chartered oilfield research ship *Oil Endeavor* (completed 1967 by Chantiers Navales de Ciotat as the sternhaul trawler *Marie Grace* and converted 1977). Characteristics included:

D: 2,860 tons (fl) S: 12 kts Dim: 85.20 × 16.50 × 5.62 (6.10 max.)

M: 3 M.A.N. R8V22 diesels (1,150 hp each); 2 Caterpillar D398C diesels (850 hp each); 1 Caterpillar D349 diesel (750 hp); 2 electric motors; 1 prop; 2,200 hp and 2 Ulstein omnidirectional thrusters of 738 hp each

Remarks: Linked generator capacity also provides 1,250-kw total load. 1,936 grt/644 nrt. Capable of 4-point moor; carries a 21-kt rescue boat. Could be chartered again if needed from owners, Ocean Inchcape, Ltd.

AMPHIBIOUS WARFARE SHIPS

ASSAULT SHIPS

Note: Landing ships and craft subordinated to the Royal Corps of Transport are covered in the Royal Army entry at the conclusion of the Great Britain section, on page 219. *Invincible*-class carriers can also carry troops.

• 2 Fearless class

| | Bldr | Laid down | L | In serv. |
|---------------|------------------|-----------|----------|----------|
| L 10 Fearless | Harland & Wolff | 25-7-62 | 19-12-63 | 25-11-65 |
| L 11 Intrepid | J. Brown (Clyde) | 11-12-62 | 5-6-64 | 11-3-67 |



Fearless (L 10)

L. & L. Van Ginderen, 11-84



Intrepid (L 11) - with armament altered

L. & L. Van Ginderen, 9-85

D: 11,060 tons (12,120 fl) (16,950 tons, draft 9.15, with well deck flooded)

S: 21 kts Dim: 158.5 (152.4 pp) × 24.38 × 6.2

A: 4/Sea Cat GWS.20 systems (IV \times 4) (L 11: IV \times 2) — 2/40-mm AA (I \times 2) — L 11: 4/30-mm Oerlikon GCM-A02 AA (II \times 2), 2/20-mm GAM-B01 AA (I \times 2) Electron Equipt: Radar: 1/978, 1/993—IFF: 1/1010 interrogator

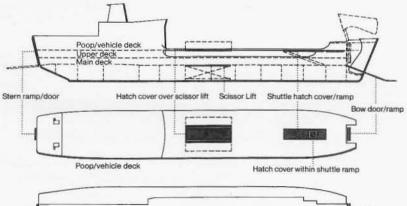
EW: passive system, 2 Knebworth/Corvus chaff RL (VIII × 2)

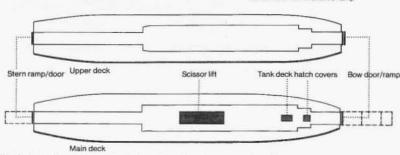
M: English-Electric GT; 2 props; 22,000 hp Electric: 4,000 kw Boilers: 2 Babcock & Wilcox, 38.66 kg/cm², 454 °C superheat Range: 5,000/20 Man: 36 officers, 520 men, 380-700 troops

Remarks: Equivalent to U.S. LPD type, and have excellent command and communication facilities for amphibious operations. CAAIS combat data system fitted. They can launch four to six assault helicopters (landing platform but no hangar). On board are four LCVP Mk 2 landing craft, which can transport 35 men or a half-ton vehicle, and four LCM (9) landing craft carrying two Chieftain tanks or four vehicles or 100 tons of supplies; four additional tanks can be carried on the tank deck. The vehicles are divided between the tank deck, a lower deck, and a half-deck reserved for jeeps. The active unit has normally been assigned as officer cadet training ship at the Royal Naval College, Dartmouth, but has been immediately available for amphibious operations as required. L 10 in reserve at Portsmouth. To be replaced in 1990s by a new LPD design. Two twin 30-mm AA replaced the after two Sea Cat launchers in L 11 1985, and two 20-mm AA were added forward.

TANK LANDING SHIPS

Bldr Laid down L In serve L. . . Str Galahad Swan Hunter, Wallsend 12-7-85 . . . 1987





Sir Galahad — schematic of interior, showing cargo-handling arrangement

MacGregor-Navire, 1985

D: About 6,500 tons (fl) **S:** 18 kts **Dim:** 140.46 (120.00 pp) \times 19.50 \times 4.30 **A:** . . .

Electron Equipt: Radar: . .

M: 2 Mirlees-Blackstone 9 K Major Mk 3 diesels, 2 props; 13,320 hp

Electric: 2,160 kw

Man: 51 crew, plus 339 troops

REMARKS: Ordered 6-9-84 as a replacement for ship of the same name lost in the Falkland War. Will have one 25-ton, two 20-ton, and two 8.5-ton cranes.

♦ 1 chartered merchant ship Bldr: Trosik Verksted, Bergen, Norway

L In serv.

L 3522 Sir Caradoc (ex-Gray Master) 8-11-72 1-73



Sir Caradoc (L 3522)

L. & L. Van Ginderen, 10-84

D: 5,980 tons (fl) S: 17.5 kts Dim: 124.20 (114.33) × 16.03 × 4.85

A: Removed Electron Equipt: Radar: 2/navigational M: 4 Bergens-Normo LSM-9 diesels; 2 CP props; 5,040 hp

Range: 10,600/16 Fuel: 500 tons

Electric: 625 kw Man: 33 crew + 24 RFA personnel

Remarks: 1,899 grt/3,480 dwt. Chartered 14-1-83 from Norwegian Nitre Shipping Co. and put in service 26-3-83 as replacement (with Sir Lamorak) for the sunken Sir Galahad and the damaged Sir Tristram. Crew augmented, armament added, and MARISAT system installed. Two 350-hp side-thrusters, bow and stern vehicle cargo ramps fitted. A: 2/20-mm AA removed 1984. Due to be returned to owners, 1986.

1 chartered merchant ship Bldr: Ankerlokken Verft, Floro, Norway

L In serv.

L 3532 SIR LAMORAK (ex-Lakespan Ontario, 9-5-72 ex-Lady Catherine, ex-Lune Bridge, ex-Anu, ex-Norcliff, ex-Anu)

D: 5,230 tons (fl) S: 18 kts Dim: 108.30 (100.00) × 20.40 × 4.95 (max)

A: None Electron Equipt: Radar: 2/navigational

M: 2 Lindholmen-Pielstick 8 PC 2L diesels; 2 CP props; 8,000 hp

Fuel: 600 tons

Remarks: 1,585 grt/2,635 dwt. Chartered 14-1-83 from Cenargo Ltd. and placed in service 26-3-83 with 10 officers and 14 crewmen from the Royal Fleet Auxiliary augmenting the regular crew. Has bow and stern doors and ramps for vehicle cargo. Ice-strengthened hull. Unlike Sir Caradoc, was not armed. Equipped with MARISAT



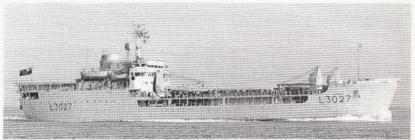
Sir Lamorak (L 3532)

L. & L. Van Ginderen, 6-83

 ${\rm SATCOMM}$ gear. Has a 500-hp bow-thruster, Cargo bale capacity: 292,000 cu. ft. Due to be returned to owners, 1986.

• 5 Sir Bedivere class (logistic lift ships in peacetime)

| | Bldr | Laid down | L | In serv. |
|----------------------|-------------------|-----------|----------|----------|
| L 3004 Sir Bedivere | Hawthorn Leslie | 10-65 | 20-7-66 | 18-5-67 |
| L 3027 Sir Geraint | Alexander Stephen | 6-65 | 26-1-67 | 12-7-67 |
| L 3029 Sir Lancelot | Fairfield | 3-62 | 25-6-63 | 16-1-64 |
| L 3036 SIR PERCIVALE | Hawthorn Leslie | 4-66 | 4-10-67 | 23-3-68 |
| L 3505 Sir Tristram | Hawthorn Leslie | 2-66 | 12-12-66 | 14-9-67 |



Sir Geraint (L 3027) - guns removed, MARISAT abaft mast

L. & L. Van Ginderen, 2-85

D: 3,270 tons (5,674 fl) L 3505: 5,800 fl $\,$ S: 17 kts $\,$ Dim: 126.45 (L 3505: 135.37) \times 17.7 \times 3.8

A: Removed Electron Equipt: Radar: 2/navigational — 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 2 Mirrlees 10-ALSSDM 10-cyl. diesels; 2 props; 9,400 hp (L 3029: 2 Denny-Sulzer diesels; 9,520 hp)

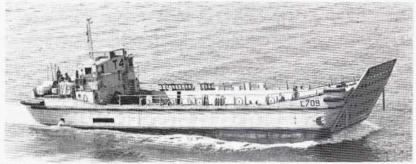
Fuel: 811 tons Range: 8,000/15 Man: 18 officers, 51 men

Remarks: In 1963 the Ministry of Transportation ordered the first of six specially designed LST-type ships for the Army, chartered in peacetime to various private maritime firms. In 1970 these ships came under the control of the Royal Fleet Auxiliary Service. Beaching cargo capacity is 340 tons. Bow and stern ramps for vehicles, interior ramps connect the two decks. Quarters for 402 men. Helicopter platform and three cranes (two 4.5, one 8.5 tons). All have MARISAT gear. L 3029 has four cranes, and is 5,550 tons full load. L 3505 badly damaged 8-6-83, but was carried home in 6-83 and repaired by Tyne Shiprepair, South Shields, 7-84 to 7-85; a new 120-ton, 8.915-m midsection being added, along with rehabilitated accommodations and helicopter deck. The others may be similarly stretched during future refits. Falklands War armament of 2/40-mm Mk 3 AA (I × 2) removed 1984. Sir Galahad (L 3005) was fatally damaged on 8-6-83 and was scuttled 24-6-83.

LANDING CRAFT

◆ 13 LCM (9) class (In serv. 1963-66)

L 700-L 702 (Bldr: Brooke Marine, Lowestoft) L 710, L 711 (Bldr: J. Bolson, Poole) L 704-L 709 (Bldr: Richard Dunston, Thorne) L 3507, L 3508 (Bldr: Vosper)



L 709 - attached to Intrepid

L. & L. Van Ginderen, 5-85

D: 75 tons (176 fl) S: 9 kts Dim: 25.7 × 6.5 × 1.7 Electron Equipt: Radar: 1/Decca 101

M: 2 Paxman YHXAM diesels; Kort-nozzle props; 624 hp Man: 6 tot.

LANDING CRAFT (continued)

Remarks: Can carry two Centurion tanks or 100 tons of cargo. All naval-manned. Can carry a Type 978 radar. Fearless (L 10) and Intrepid (L 11) can each carry four of this class. L 703 (F4-Fearless No. 4) lost to bomb 8-6-82.

Bldrs: 1 by Fairey Allday Marine, Hamble ♦ 15 LCVP MK 4 Class

(In serv. 1982); 14 by Souter, Cowes (In serv. 18-2-85 to 9-86)



LCVP Mk 4 8404

L. & L. Van Ginderen, 7-85



LCVP Mk 4 class

Souter, 1985

D: 10 tons (fl) S: 20 kts (16 loaded) Dim: 13.00 (11.90 pp) × 3.20 × 0.80

A: 2/7.62-mm mg (I × 2)

M: 2 Perkins 76-3544 diesels; 2 props; 440 hp Range: 200/12 Man: 3 crew + 35 troops

Remarks: Prototype, ordered 6-2-80, is 13.50 long by 3.50 beam. Series units ordered 21-8-84. Have cargo well 8.80 × 2.13 and a cargo capacity of 5.5 tons. Aluminum construction. Replacing LCVP (1) through LCVP (3). First unit delivered 18-2-85.

• 3 Ferryman 18 class Bldr: Freezer Aluminum Boats, Hayling Island (In serv. 1 on 13-8-84, 2 on 16-8-84)

D: 2.5 tons S: 20 kts Dim: 5.48 × 2.21 × 0.40

M: 1 OMC gasoline outboard; 140 hp Cargo: 10 troops

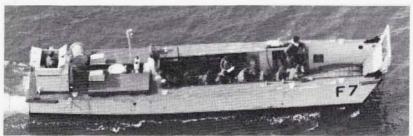
Remarks: New series of raider boats for Royal Marines, ordered 16-5-84. Additional aluminum and rigid inflatable raider boats of this size are also available.

♦ 26 LCVP

LCVP (1): 102, 112, 118, 120, 123, 127, 128, 134, 136

LCVP (2): 142-149

LCVP (3): 150-158



LCVP(2) from Fearless

M.O.D., 1982

D: 8.5 tons (13.5 fl) **S**: 8-10 kts **Dim**: 12.7 or $13.1 \times 3.1 \times 0.8$ M: 2 Foden diesels; 2 props; 130 or 200 hp

REMARKS: The eight LCVP (2) are carried in Fearless and Intrepid. Four fitted for mine countermeasures in the Falklands War, 5-82. All due for replacement.

• 3 LCP(L) (3)

501, 503, 556

D: 6.5 tons (10 fl) S: 12 kts Dim: 11.3 × 3.4 × 1.0 M: 1 diesel; 1 prop; 225 hp

35 or more "Mexiflote" self-propelled pontoons



A "Mexiflote" self-propelled pontoon in use during the recovery of the Falkland Islands, 6-82. Each Sir Bedivere-class LST can carry two of these low-freeboard craft, mounted vertically on the hull sides. Powered by 2 Sykes Marine Harbormaster F725 units: 150 hp. Sixty-seven more propulsion units ordered 1985, using Ford 2725 diesels.

AUXILIARY SHIPS

Most auxiliary and supply vessels are responsible to the Royal Fleet Auxiliary (RFA), an organization peculiar to the Royal Navy. Built to the specifications of Lloyds of London (compartmentation, security, habitability), they also meet the standards of the Shipping Naval Acts of 1911 and of the Ministry of Transportation. In 1985, it was decided to reclassify all RFA ships as "Government-Owned Vessels." Manned by the Civil Service, they fly the blue ensign of the reserve, rather than the white ensign. In addition, about 40 tugs, salvage vessels, cable layers, research vessels, etc., are assigned to the Royal Maritime Auxiliary Service (RMAS), whose personnel are also civil servants. The former Port Auxiliary Service (PAS) was absorbed by the RMAS on 1-10-76. An additional group of service craft are operated by the Royal Naval Auxiliary Service (RNXS). Ships not listed below as either RFA, RNXS, or RMAS are manned by the Royal Navy. RMAS ships have black hulls and buff upperworks, while RNXS units have black hulls and grey upperworks. They often do not display hull numbers; pendant numbers are listed hereafter in parentheses for reference only.

HYDROGRAPHIC SHIPS

Note: All Royal Navy survey ships are painted white, with buff-colored stacks and

1 improved Hecla class

| | Bldr | Laid down | L | In serv. |
|----------------|--------------|-----------|---------|----------|
| (A 138) HERALD | Robb Caledon | 9-11-72 | 4-10-73 | 31-10-74 |



Herald - on return from Falklands deployment, gray-painted

L. & L. Van Ginderen, 2-84

D: 2,125 tons (2,945 fl) S: 14 kts Dim: 79.3 × 14.9 × 4.7 Electron Equipt: Radar: 1/1006, 1/. . . nav. Man: 128 tot. M: Diesel-electric propulsion (identical to the Hecla class); 1 prop

Remarks: Improved version of the Hecla class. Carries one Wasp helicopter. Has Type 2034 Sidescan charting sonar. On ice-patrol duties, 6-83 to 2-84, gray-painted and with 2/20-mm AA. Has MARISAT. Has Type 2034 mapping sonar.

3 Hecla class

| | Bldr | Laid down | L | In serv. |
|----------------|--------------------|-----------|----------|----------|
| (A 133) HECLA | Yarrow, Blythswood | 6-5-64 | 21-12-64 | 9-9-65 |
| (A 137) HECATE | Yarrow, Scotstoun | 26-10-64 | 31-3-65 | 20-12-65 |
| (A 144) Hydra | Yarrow, Blythswood | 14-5-64 | 14-7-65 | 5-5-66 |

HYDROGRAPHIC SHIPS (continued)



Hydra-in survey colors, Wasp aft

L. & L. Van Ginderen, 1-83

D: 1,915 tons (2,733 fl)
 S: 14 kts
 Dim: 79.25 (71.63 pp) × 14.94 × 4.0
 M: Diesel-electric propulsion: 3 Paxman Ventura diesels (12 cyl.), each 1,280 hp; 2 electric motors; 1 prop; 2,000 hp

Fuel: 450 tons Range: 20,000/9; 12,000/11 Man: 14 officers, 104 men

Remarks: Based on the oceanographic research vessel *Discovery*. Air-conditioned hull, reinforced against ice; bow-thruster for navigation in narrow waters. Hangar and platform for one Wasp helicopter. Excellent scientific laboratories; usually carry seven civilian scientists in addition to crew. Two survey launches. Have Type 2034 sidescan charting sonar. A 133 and A 144 were used as ambulance ships during the Falklands War, fitted with MARISAT SATCOMM gear. A 137, painted gray and armed with 2/20-mm AA and Blowpipe missiles, did a tour as ice-patrol ship in the South Atlantic 7-82 to 7-83. Have Type 2034 mapping sonars.

♦ 0 (+1) Roebuck-class coastal survey ship Bldr: Brooke Marine, Lowestoft

Laid down L In serv.
(A. . .) ROEBUCK . . . 14-11-85 1986

D: 1,300 tons (fl) S: 16 kts Dim: 63.89 (57.60 pp) × 13.00 × 3.82

A: . . . Electron Equipt: Radar: . .

M: 2 Mirrlees Blackstone ES-8 Mk 1 diesels; 2 CP props; 3,040 hp

Range: 4,000/10 Man: 52 tot.

Remarks: Ordered 21-5-84 to perform hydrographic surveys in local British waters. An enlarged Bulldog.

◆ 4 Bulldog-class coastal survey ships Bldr: Brooke Marine, Lowestoft

L In serv.

(A 317) Bulldog 12-7-67 21-3-68

(A 319) Beagle (ex-Barracuda) 7-9-67 9-5-68 (A 320) Fox 9-11-68 11-7-68 (A 335) Fawn 29-2-68 10-9-68



Fawn

L. & L. Van Ginderen, 8-84

D: 800 tons (1,088 fl) S: 15 kts Dim: $60.95 \times 11.43 \times 3.6$ M: 4 Lister-Blackstone ERS-8-M diesels; 2 KaMeWa CP props; 2,640 hp Electric: 720 kw Range: 4,600/12 Man: 5 officers, 34 men

Remarks: Hulls built to commercial specifications and reinforced against ice damage. Carry one 8.7-meter survey launch. Passive tank stabilization. Decca "Hi-Fix" precision plot. Can be equipped with 2/20-mm AA on bridge wings (I × 2). Carry one 8.7-m survey boat. Have Type 2034 mapping sonars.

◆ 1 inshore survey craft Bldr: Emsworth SY, Emsworth

L In serv. (A86) Gleaner 18-10-83 5-12-84

D: 22 tons (fl) S: 14 kts Dim: 14.81 × 4.55 × 1.30

Electron Equipt: Radar: 1/Decca 110

M: 2 Rolls-Royce CG M-310 diesels; 2 props; 524 hp; 1 Perkins 4.236 M cruise diesel; 1 prop; 72 hp

Range: 450/10 Man: 1 officer, 4 men



Gleaner

Maritime Photographic, 2-85

Remarks: Smallest commissioned "ship" in the RN, intended for survey work in the Solent-Portsmouth area and in the Channel Islands. Glass-reinforced plastic hull by Halmatic. Speed on cruise engine: 3 to 7 kts.

Note: Three 9-meter survey boats ordered from Halmatic in 12-84 are intended to be carried by larger survey ships and not to operate independently:

D: 8 tons (fl) S: 13 kts Dim: 9.00 (8.25 pp) × 3.60 × 0.99 M: 2 Perkins 6.355 diesels; 2 props; 230 hp Range: 200/13 Man: 4 tot.

Note: Echo-class coastal survey craft Echo (A 70) Enterprise (A 71) and Egeria (A 72) were paid off for disposal 12-84. The similar Woodlark and Waterwitch (M 2720) were paid off 4-4-85 and 4-3-85, respectively. The cable tender St. Margarets (A 259) was stricken 18-12-84.

EXPERIMENTAL SHIPS

• 1 sonar-trials ship



Auricula (A 285)

L. & L. Van Ginderen, 3-83

D: 1,200 tons (fl) **S:** 12 kts **Dim:** $60.0 (52.0 \text{ pp}) \times 11.0 \times 3.6$ **M:** 2 Mirrlees-Blackstone ESL-6-MGR diesels; 2 props; 1,300 hp **Man:** 7 officers, 15 men, 10 technicians

Remarks: Ship operated by RMAS. Ordered 5-1-78. "Trials and Experimental Tender" to Admiralty Underwater Weapons Establishment, Portland; replaced Steady. Has a bow-thruster.

♦ 1 sonar-research ship

Bldr Laid down L In serv.
A 367 Newton Scott-Lithgow, Greenock 19-12-73 26-6-75 17-6-76



Newton (A 367)

L. & L. Van Ginderen, 8-84

EXPERIMENTAL SHIPS (continued)

D: 3,940 tons (fl) S: 14 kts Dim: 98.6 (88.7 pp) \times 16.15 \times 4.7 Electron Equipt: Radar: 1/1006 — Sonar: 1/182, 1/185, 1/2010, 1/2013 M: 3 Mirrlees-Blackstone EWSL-12 MA 1,450-hp diesels, electric drive; 1

Kort-nozzle prop; 2,680 hp

Electric: 2,150 kw Fuel: 244 tons Range: 5,000/9

Man: 61 men (including 12 technicians)

Remarks: Intended for sonar-propagation trials and also fitted to lay cable over the bows. Equipped with 350-hp retractable bow-thruster and passive tank stabilization system. Propulsion plant extremely quiet, with a 300-hp electric motor for low speeds. Has four laboratories and seven special winches. Can carry and lay 400 tons of undersea cable and 361 tons cable repeaters. Navigation equipment includes SINS, satellite receivers, two optical range-finders, Decca Mk 21, and considerable other equipment. RMAS-operated. Optical rangefinder atop pilothouse.

♦ 1 torpedo-research vessel

A 364 WHITEHEAD Bldr: Scotts SB, Greenock (L: 5-5-70)



Whitehead (A 364)

1971

D: 3,040 tons (fl) S: 15.5 kts Dim: 97.23 (88.7 pp) × 14.63 × 5.2
 A: 1/533-mm TT (bow, submerged) - 3/324-mm Mk 32 ASW TT (III × 1)

M: 2 Paxman 12 YLCM diesels; 1 prop; 3,400 hp

Range: 4,000/12 Man: 10 officers, 47 men and scientists

Remarks: Designed not only to launch and recover exercise torpedoes but also to perform precision tracking in three dimensions, using passive hydrophone arrays, and post-firing checkout and maintenance on torpedoes. RMAS-operated.

• 1 sonar-research barge



Crystal

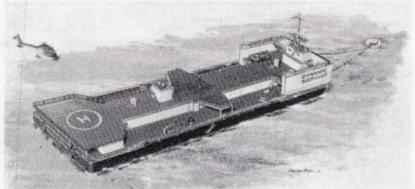
G. Arra, 1977

D: 3,040 tons (fl) Dim: 126.0 × 17.0 × 1.7 Man: 60 tot.

Remarks: No propulsion plant. Assigned to test new sonars at Admiralty Underwater Weapons Establishment, Portland. RMAS-operated.

• 1 vertical-launch missile trials barge

Longbow (ex-Dynamic Servant, ex-Ocean Servant 2) (In serv. 1976)



Longbow-trials barge for Sea Wolf VLS

Y-ARD Ltd., 1984

D: 12,600 tons (fl) S: . . . Dim: 109.0 (108.0 pp) × 30.0 × . . .

A: 3/Sea Wolf VLS launchers Electron Equipt: Radar: 2/. . . nav., 2/911 f.c. M: 2 Bolnes diesels; 2 Schöttel props; 1,200 hp

Remarks: Delivered post-conversion 23-7-85. Originally chartered by British Aerospace late 1984; converted from float-on/float-off cargo barge at Govan.

REPAIR SHIP

♦ 1 former oilfield support tender Bldr: Götaverken, Göteborg, Sweden

L In serv. (RN)

A 132 DILIGENCE 1981 12-3-84



Diligence (A 132)

RN. 1984

D: Approx. 10,900 tons (fl) S: 16 kts Dim: 111.47 (101.30 pp) × 20.97 × 8.30 A: 4/20-mm Oerlikon GAM-B01 AA (I × 4)

Electron Equipt: Radar: 2/. . .nav.

M: 5 Nohab 16-cyl. diesels, electric drive (4 motors); CP prop; 1,800 hp —2 side-thrusters forward, 2 rotatable thrusters aft

Man: RFA: 13 officers, 29 men + 155-man naval repair party Fuel: 3,150 tons

Remarks: 6,060 grt former North Sea oilfield support ship chartered during Falklands War for emergency, war-zone repairs. Purchased outright 31-10-83 and commissioned 12-3-84. Has MARISAT SATCOMM terminal, large helicopter deck (no hangar) atop massive superstructure, moon-pool for divers. Ice-strengthened hull. Cranes include four 20- to 40-ton, one 20-ton, one 15-ton and one 5-ton. Capable of firefighting, towing, and salvage. Very maneuverable; can make 6 kts sideways. Near-sister Bar Protector was chartered from 9-83 to 1-6-84, when relieved by Diligence.

ACCOMMODATIONS SHIPS

1 Head class, former repair ship

Bldr Laid down L In serv.
A 134 RAME HEAD Burrard, Vancouver 12-7-44 22-11-44 18-8-45



Rame Head (A 134)

L. & L. Van Ginderen, 7-83

D: 9,000 tons (11,270 fl) **S:** 10 kts **Dim:** 134.6 (126.8 pp) \times 17.5 \times 6.9

A: Removed M: Triple-expansion steam; 1 prop; 2,500 hp

Boilers: 2 Foster-Wheeler, 17 kg/cm², 330 °C Fuel: 700 tons

Electron Equipt: Radar: 1/975 Man: 425 tot.

Remarks: Former escort maintenance ship employed as an accommodations ship at Portsmouth since 6-76: towed to Rosyth 13-11-84 to serve Type 42 guided-missile destroyers based there. Repair equipment maintained on board in preservation since 1972. Has one 12-ton and two 5-ton cranes. Armament removed (11 single 40-mm AA).

Note: The "County"-class guided-missile destroyer Kent (D 12) decommissioned from harbor training service 16-5-83; was recommissioned 6-8-85 as an accommodation ship for cadets.

FLEET-REPLENISHMENT SHIPS

♦ 2 Fort-class ammunition, explosives, food, and stores ships Lithgow, Greenock

| | Laid down | L | In serv. |
|-------------------|-----------|---------|----------|
| A 385 FORT GRANGE | 9-11-73 | 9-12-76 | 6-4-78 |
| A 386 FORT AUSTIN | 9-12-75 | 9-3-78 | 11-5-79 |

FLEET-REPLENISHMENT SHIPS (continued)



Fort Austin (A 386)

L. & L. Van Ginderen, 7-85

D: 22,749 tons (fl) S: 20 kts Dim: 183.8 (170.0 pp) × 24.1 × 8.6

A: 2/20-mm AA (I × 2)

Electron Equipt: Radar: Kelvin-Hughes 21/16 P

EW: 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 1 Sulzer 8 RND 90 diesel; 1 prop; 23,200 hp Electric: 4,120 kw

Range: 10,000/20 Man: 140 Royal Fleet Auxiliary personnel, plus 45 naval.

Remarks: Ordered 11-71 and 4-72; 16,009 grt/8,300 dwt/6,729 nrt. In addition to the flight deck on the stern, the roof of the hangar can land helicopters. One Sea King is normally carried (although four can be accommodated), and the ships will have ASW torpedoes and other ASW stores for use if needed. Carry 3,500 tons of ammunition, food, and spares. Bow-thruster. Three sliding-stay, constant-tension, alongside-replenishment stations on each beam. Have 2/10-ton and 4/5-ton electric stores cranes. Platforms for two SCOT satellite communications radomes atop superstructure, but received MARISAT commercial system instead, and 20-mm AA were mounted on the SCOT platforms in 1982. Have Type 182 towed torpedo decoys, RFA-operated.

• 2 Resource-class ammunition, explosives, food, and stores ships

| | Bldr | Laid down | L | In serv. |
|----------------|--------------------------|-----------|---------|----------|
| A 480 RESOURCE | Scotts SB, Greenock | 6-64 | 11-2-66 | 18-5-67 |
| A 486 REGENT | Harland & Wolff, Belfast | 9-64 | 9-3-66 | 6-6-67 |



Resource (A 480) - MARISAT, chaff RL added

L. & L. Van Ginderen, 7-83



Regent (A 486)

L. & L. Van Ginderen, 4-84

D: 22,890 tons (fl) (18,029 grt) S: 17 kts Dim: $195.07 (182.88 \text{ pp}) \times 23.47 \times 7.95$

Electron Equipt: Radar: 1/Kelvin-Hughes 21/16P, 1/Kelvin-Hughes 14/12

EW: 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 1 set A.E.I. GT; 1 prop; 20,000 hp Boilers: 2 Foster-Wheeler

Man: 119 Royal Fleet Auxiliary, 52 civilian, plus airgroup

Remarks: RFA-operated. Three sliding-stay, constant-tension, alongside-replenishment stations per side. Carry one Sea King helicopter. One to enter reserve 1984-85.

FLEET OILERS

• 0 (+6+6) new-construction replenishment ships

| | Bldr | Laid down | L | In serv. |
|-----|------|-----------|---|----------|
| A N | | | | 1990 |
| A N | | 2.2.2 | | |



New Replenishment Ship - artist's rendering

M.O.D., 1984

D: Approx. 40,000 (fl) S: 20 kts Dim: 202.0 (195.0 wl) × 28.0 × . . . A: 32 Sea Wolf GWS.26 vertical-launch SAM - 2/30-mm Rarden AA -3/helicopters

Electron Equipt: Radar: 1/1007, 1/. . . nav, 1/996, 2/911 EW: intercept array; Shield RL (VI × 4)

M: 2 medium-speed diesels; 2 props; . . . hp

Electric: . . . Range: .

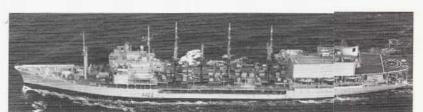
Man: 120 RFA, 76 naval, 56 spare accom.

Remarks: Intended to carry about 70,000 barrels (12,000 m³) liquid cargo, 5,000 m³ munitions, and 3,000 m3 dry stores, plus 500 m3 refrigerated. Will replace present generation of replenishment ships. The first was expected to be ordered late in 1985. There will be two fueling stations per side, plus an astern refueling capability. One solid-replenishment station per side, plus vertical replenishment. The ships will carry ASW ordinance for their three helicopters. Will have SCOT antennas for the SHF SATCOMM Slaynet IV system.

The second series of six will be of a simplified version, primarily intended for point-to-point service as replacements for the "Leaf" series.

♦ 3 Olwen class

| | Blar | L | in serv. |
|----------------------------|-----------------|----------|----------|
| A 122 OLWEN (ex-Olynthus) | Hawthorn Leslie | 10-7-64 | 21-6-65 |
| A 123 Olna | Hawthorn Leslie | 28-7-75 | 1-4-66 |
| A 124 OLMEDA (ex-Oleander) | Swan Hunter | 19-11-64 | 18-10-65 |



Olwen (A 122)

Lts. J. Lathrop/G. Bajoing, USN, 1983



Olna (A 123) - note traveling crane over flight deck L. & L. Van Ginderen, 11-84

D: 10,890 tons light (36,000 fl) S: 20 kts

Dim: 197.51 (185.92 pp) \times 25.6 \times 10.5 A: 2/20-mm AA (I \times 2)

Electron Equipt: Radar: 1 Kelvin-Hughes 14/12, 1 Kelvin-Hugnes 14/16, 1/1006 EW: 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 1 set Pamatreda GT; 1 prop; 26,500 hp Boilers: 2 Babcock & Wilcox, 60 kg/cm², 510°C Man: 25 officers, 62 men, plus naval air group

Remarks: Hull reinforced against ice, living space air-conditioned, advanced automation, excellent facilities for replenishment at sea; 25,000 dwt, 18,600 grt. Helicopter platform; hangar to port recently enlarged to hold two Sea King helicopters, but normally only one is carried. Can carry 18,400 tons fuel oil, 1,720 ions diesel, 3,730 tons aircraft fuel, and 130 tons lube oil. RFA-operated. Now have MARISAT commercial communications satellite system. Chaff RL and guns added 1982.

1 later Tide class Bldr: Hawthorn Leslie, Hebburn-on-Tyre

Laid down L In serv. A 75 Tidespring 24-7-61 3-5-62 18-1-63

FLEET OILERS (continued)



Tidespring (A 75)

L. & L. Van Ginderen, 6-84

D: 8,531 tons light (27,400 fl) S: 18.3 kts

Dim: 177.6 (167.65 pp) × 21.64 × 9.75 A: 2/20-mm Mk 4 AA (I×2) Electron Equipt: Radar: 1 Kelvin-Hughes 14/12, 1 Kelvin-Hughes 14/16

EW: 2/Knebworth/Corvus Chaff RL (VIII × 2)

M: 1 set Pamatreda GT; 1 prop; 15,000 hp Man: 30 officers, 80 men, plus air group

Remarks: RFA-operated; 18,900 dwt, 14,130 grt. As built, carried 17,400 tons fuel oil and 700 tons diesel, but with RN dependence on gas-turbine propulsion, proportions may have changed. Hangar and flight deck for 1 large helicopter. Sister *Tidepool* (A 76) sold to Chile, transferred 4-82 to Chile, repossessed for Falklands War, turned over permanently 8-82. MARISAT SATCOMM, armament, and chaff RL added 1982. Was scheduled for disposal 1984, but is being retained, completing a refit 22-12-84.

SMALL FLEET OILERS

♦ 5 Rover class Bldr: Swan Hunter, Hebburn-on-Tyne

| | L | In serv |
|-------------------|----------|---------|
| A 268 GREEN ROVER | 19-12-68 | 15-8-69 |
| A 269 GREY ROVER | 17-4-69 | 10-4-70 |
| A 270 BLUE ROVER | 11-11-69 | 15-7-70 |
| A 271 GOLD ROVER | 7-3-73 | 22-3-74 |
| A 273 BLACK ROVER | 30-10-73 | 23-8-74 |



Grey Rover (A 269) - chaff RL and MARISAT atop bridge

L. & L. Van Ginderen, 7-83



Blue Rover (A 270) - MARISAT fwd

L. & L. Van Ginderen, 7-83

D: 4,700 tons light (11,522 fl) S: 19.25 kts Dim: 140.5 × 19.2 × 7.3 Electron Equipt: Radar: 3/Decca navigational — EW: 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 2 SEMT-Pielstick 16PA 4 diesels; 1 CP prop; 15,300 hp Electric: 2,720 kw Fuel: 965 tons Range: 15,000/15 Man: 16 officers, 31 men

Remarks: RFA-operated; 6,822 dwt (A 271, A 273: 6,692 dwt), 7,510 grt. Carry 6,600 tons of fuel plus water, dry stores, and provisions. Helicopter deck but no hangar. A 271 is used in supporting the training squadron at Portland. First three re-engined 1973-74. Not all carry chaff RL. Stern shapes vary, early units having two stern anchors and later units one.

SUPPORT OILERS

• 4 Appleleaf class Bldr: Cammell Laird, Birkenhead

| | L | In serv. |
|-------------------------------------|----------|-------------|
| A 79 APPLELEAF (ex-Hudson Cavalier) | 24-7-75 | 11-79 |
| A 81 Brambleleaf (ex-Hudson Deep) | 22-1-76 | 3-80 |
| A 109 BAYLEAF (ex-Hudson Progress) | 27-10-81 | 26-3-82 |
| A 110 Orangeleaf (ex-Balder London) | | 2-5-84 (RN) |



Brambleleaf (A 81)

L. & L. Van Ginderen, 11-84



Bayleaf (A 109)

L. & L. Van Ginderen, 5-85

D: 40,200 tons (fl) S: 16.4 kts Dim: 170.69 (163.51 pp) × 25.94 × 11.56 A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 2/. . . nav. M: 2 Crossley-Pielstick 14PC2V-400 diesels; 1 CP prop; 14,000 hp Fuel: 2,498 tons Man: 65 tot.

Remarks: RFA-operated. A 79 chartered 1978 and refitted 12-78 to 11-79 at Wallsend Dry Docks; stack raised 3.5 m, dry cargo hold added forward, replenishment-at-sea working deck added amidships, and superstructure enlarged aft. A 81 given similar refit by Cammell Laird after charter in 1979, completing 1980. A 109, on which work had been suspended while still on the ways, was chartered 3-4-81 and similarly altered. A 110, on charter since 4-82, was purchased 26-3-84 and initially operated without replenishment equipment, receiving a similar conversion to that of her sisters in 1985 to 3-86. Average 20,440 grt, 33,750 dwt. All now have one refueling station per side, over-the-stern fueling, and MARISAT.

♦ 1 ex-Norwegian tanker

Bldr: Uddevallavarvet, Uddevalla, Sweden

L In serv. 1981 10-85 (in RFA)

A. . . OAKLEAF (ex-Oktania)

D: Approx. 45,000 tons (fl) S: 15.75 kts Dim: 173.69 (168.00

wl × 32.26 × 10.22 A: . . . Electron Equipt: Radar: 2/. . . nav.

M: 1 Uddevalla-Burmeister & Wain 4-cyl., 2-stroke diesel; 1 CP prop; 12,250 hp Electric: 2,472 kw Man: . . .

REMARKS: 21,999 grt/34,800 dwt. Purchased 7-85 to replace Plumleaf (A 78). Icestrengthened hull, with tunnel side-thrusters fore and aft. Cargo: 43,020 m³.

Note: Plumleaf (A 78) returned to owners 1985; similar Pearleaf (A 77) also returned.

MISCELLANEOUS AUXILIARY SHIPS

• 1 helicopter support ship

Bldr: Stocznia Gdanska, Poland

L In serv. (RFA)

A 131 Reliant (ex-Astronomer)

1-77 16-11-83

D: Approx. 28,000 tons (fl) S: 20 kts Dim: 204.22 (193.81 pp) × 30.99 × 8.00 A: 4/20-mm Oerlikon GAM-B01 AA (I × 4) — 5/Sea King HAS.5 helicopters

Electron Equipt: Radar: 3/nav. EW: MEL Matilda passive, 2/Shield decoy RL (VI × 2)

M: 1 Cegielski-Sulzer 10 RND 90, 10-cyl. diesel; 1 prop; 29,000 hp (26,100 sust.) Electric: 3,840 kw Range: . . . Man: . . .

Fuel: 3,327 tons heavy oil + 630 tons diesel + 600 tons JP-5 aircraft fuel

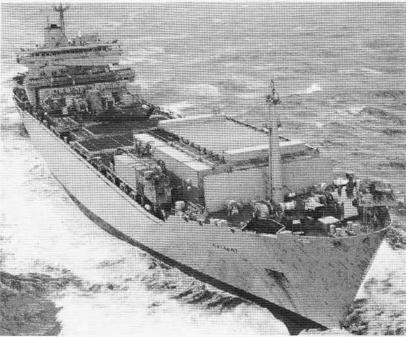
Remarks: 27,867 grt/23,120 dwt when chartered 4-82 as an aircraft transport and helicopter support ship for the Falklands War. At that time, a temporary hangar with standard 40-ft. containers for walls was erected forward. Purchased 26-4-83 and given further conversion, employing the 79-container module, U.S. Navy "Arapaho" helicopter support system, on loan for one year (later extended into 1986). Can carry up to 5 Sea King helicopters, with full support capability. Converted by Cammell Laird, Birkenhead. Accommodations added aft for 140 aviation personnel. Hangar measures 33 by 13 m; flight deck measures 48.66 by 29.26 m. Ship has fin stabilizers and a

MISCELLANEOUS AUXILIARY SHIPS (continued)



Reliant (A 131)

RN, 12-83



Reliant (A 131)

M.O.D., 1984

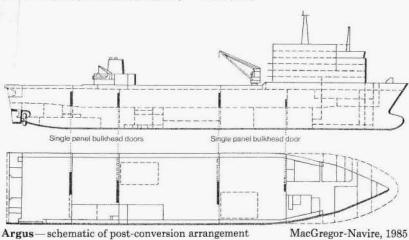
bow-thruster. Refitted again beginning 12-2-84 to correct deficiencies. 40-ton container gantry crane retained primarily as ballast, as ship is too lightly loaded.

1 helicopter training ship

Bldr: Breda SY Venice, Italy (In serv. 1981)

K . . . Argus (ex-Contender Bezant)

In serv. 1986 (RN)



D: 18,000 tons (fl) S: 19.25 kts Dim: 173.00 (160.00 pp) × 30.40 × 8.20

A: 4/20-mm Oerlikon GAM-B01 AA (I × 4)-6 Sea King helicopters (or up to 12 Sea Harrier V/STOL fighters)

Electron Equipt: Radar:

EW: 4 Shield decoy RL (VI × 2)

M: 2 Linkholmen-Pielstick 18PC2.5 V400 diesels; 2 props; 21,060 hp Range: 20,000/19 Fuel: 4,515 tons heavy oil/1,565 tons diesel Electric: 3,600 kw Man: . .

Remarks: Purchased 2-3-84, having been on charter since 5-82, when she was used as an aircraft transport to the Falklands. Conversion at Harland and Wolff, Belfast, to complete 1986, with vehicle cargo decks converted to a hangar and elevators added. Intended to replace Engadine (K 08) as helicopter training ship or to act as a transport for Harrier/Sea Harrier aircraft. Plans to purchase sister Contender Argent dropped late 1984. Data above pertains to ship in merchant configuration (11,445 grt); range may be reduced if fuel tankage is altered for aircraft fuel. Originally a combined container/vehicle cargo ship, with vehicle ramps to starboard at bow and stern. Will have space for 8 Sea Harriers and 3 helicopters on the hangar deck and 3 helicopters on deck, aft. There are two aircraft elevators.

1 helicopter training ship

K 08 ENGADINE

Bldr Henry Robb Ltd. Laid down 9-8-65

In serv.

16-9-66 15-12-67



Engadine (K 08) - with lengthened flight deck, MARISAT, chaff launchers L. & L. Van Ginderen, 11-84

D: 3,875 tons light (9,105 fl) **S:** 16 kts **Dim:** $141.20 \times 17.86 \times 6.73$ Electron Equipt: Radar: 3/nav. — EW: 12/Knebworth/Corvus chaff $RL(VIII \times 2)$

M: 1 Sulzer 5RD68, 5-cyl. diesel; 1 prop; 5,500 hp Electric: 1,200 kw Fuel: 450 tons Man: 61 RFA plus 14 RN (and air group: 29 officers, 84 men)

REMARKS: Intended to train flight crews in ASW helicopter procedures at sea. The hangar can hold either four Wessex or two Sea King and two Wasp. A smaller hangar atop the superstructure serves a target-drone launch facility. Equipped with Denny-Brown fin stabilizers and has remote bridge control for all engineering plants. Many internal compartments are voids. RFA-operated. 6,384 grt, 4,520 dwt. Flight deck extended aft 11.9 m at Gibraltar, early 1984, to permit two Sea King on deck at once; original length 129.31 m. To be replaced by Argus in 1986.

1 antarctic patrol ship

Bldr In serv. Krögerwerft, Rendsburg 25-5-56 12-56 A 171 ENDURANCE (ex-Anita Dan)



Endurance (A 171)

L. & L. Van Ginderen, 5-83

D: 3,600 tons (fl) **S**: 14.5 kts **Dim**: 93.58 (82.9 pp) \times 14.03 \times 5.03 A: 2/20-mm Mk 4 AA (I × 2) - 2/Wasp helicopters (AS.12 ASM)

Electron Equipt: Radar: 2/Decca TM 829

M: 1 Burmeister & Wain 550VTBF, 5-cyl. diesel; 1 prop; 3,220 hp (plus a bow-thruster)

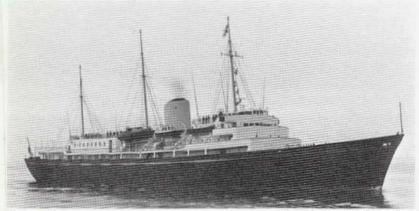
Range: 12,000/14 Man: 13 officers, 106 men, up to 12 scientists

REMARKS: Purchased 20-2-67. Hull painted red, superstructure white. Carries two Wasp helicopters and two survey launches. Converted 1967-68 by Harland & Wolff, Belfast, to support the British Antarctic Survey and act as guard ship in the Falkland Islands; 2,641 grt. MARISAT added 1978. Was to have been discarded 1982, but performed with distinction in Falklands War and will be retained. Refitted 1982 to 14-10-83.

MISCELLANEOUS AUXILIARY SHIPS (continued)

* 1 royal yacht

Bldr Laid down L In serv. (A 00) Britannia J. Brown (Clydebank) 7-52 16-4-53 14-1-54



Britannia

L. & L. Van Ginderen, 8-84

D: 3,990 tons (4,961 ft) S: 21 kts Dim: 125.9 (115.82 pp) × 16.76 × 4.86 Electron Equipt: Radar: 2/1006 M: 2 sets GT; 2 props; 12,000 hp Boilers: 2 Fuel: 510 tons Range: 3,100/20 Man: 21 officers, 256 men

Remarks: 5,769 grt. Naval-manned. In wartime, would become a hospital ship (200 beds and 60 medical personnel) and have a helicopter platform. Gyrofin stabilizers. Reboilered during 1980 refit; equipped to burn distillate fuel 1984. Equipped with MARISAT 1982.

♦ 1 submarine-support ship

A 236 WAKEFUL (ex-Dan, ex-Herakles) Bldr: Cochrane, Selkirk (In serv. 1965)



Wakeful (A 236)

J. Goss, 1980

D: 900 tons (1,100 fl) S: 15 kts Dim: 44.43 (38.86 pp) × 10.7 × 4.74 Electron Equipt: Radar: 1/1006 M: Ruston & Hornsby 9-cyl. diesels; 1 prop; 4,750 hp Electric: 380 kw Man: 27 tot.

Remarks: Former commercial tug, 492 grt. Purchased 1974 from Sweden to act as submarine target ship and safety vessel at Faslane; subsequently also used occasionally on fisheries patrol duties. Naval-manned. Very expensive to operate.

• 1 seabed operations tender

Bldr Laid down L In serv.

K 07 Challenger Scotts SB, Govan 25-1-80 19-5-81 1984



Challenger (K 07)

Walles Foto, 3-85



Challenger (K 07) — note stern gallows crane, helicopter deck abaft paired stacks
L. & L. Van Ginderen, 7-84

D: 6,500 tons (7,185 ft) S: 15 kts Dim: 134.0 (130.5 pp) × 18.0 × 5.4

Electron Equipt: Radar: 1/1006, 1/... —Sonar: 1/2008, 1/2013, 1/193M

M: 5 Ruston 16 RK3CZ diesels (3,430 hp each), electric drive; 2 Voith-Schneider vertical cycloidal props aft; 10,200 hp (three bow-thrusters)

Electric: 1,500-kw harbor service Range: 8,000/... Man: 186 tot.

Remarks: Ordered 28-9-79. Royal Navy manned. Dynamic positioning system capable of maintaining a constant location in 50- to 60-kt winds, in a sea state of 5. Carries a submersible decompression chamber for 12 divers and is equipped for saturation diving. Twelve divers and their equipment are handled through a "moon-pool" amidships by a 25-ton crane, while a gallows crane on the stern will handle Towed Unmanned Submersibles (TUMS). Passive tank stabilization system. The integrated navigational system, with a GEC 4070 computer, incorporates Decca "Hi-Fix," Omega, navigational satellite reception, and a Decca radio navaid receiver. The helo platform will accept a Sea King. Completion delayed by faulty wiring. Can move at 3.5 kts sideways and can lift 25-ton objects from the bottom.

• 1 offshore support and salvage ship

SEAFORTH CLANSMAN Bldr: Cochrane, Selby (In serv. 1977)



Seaforth Clansman - with new helo deck

L. & L. Van Ginderen, 3-85

D: 3,320 tons (fl) S: 14 kts Dim: 78.6 (68.7 pp) × 13.7 × 5.01
M: 4 Mirrlees-Blackstone EZSL-12 diesels; 2 CP, Kort-nozzle props; 7,320 hp
Electric: 1,748 kw Fuel: 404 tons
Man: 46 tot. (plus 20-man naval salvage group)

Remarks: 1,977 grt/1/180 dwt. RFA-operated; chartered 1978, extended into at least 1986. The ship was originally intended for oilfield support duties and for maintaining single-point deep moorings. Has a submersible diver's decompression chamber and a "moon-pool" opening through the keel of the ship to ensure smooth waters for diving operations. Both bow- and stern-thrusters are fitted. Has a four-point mooring system and a 30-ton capacity electrohydraulic crane to port, aft. Has no pendant number. Kingposts with four fire monitors replaced by grotesquely elevated helicopter deck during refit 5 to 7-84.

♦ 1 Falkland Islands support ship, ex-Argentine oilfield supply tug

Bldr L In serv.

. . . FALKLAND SOUND J.G. Hitzler SY, Lauenburg 1967 6-83 (RN)

(ex-Yehuin, ex-Millerntor)

Remarks: 495 grt/756 dwt. Owned by Geomatter S.A., Buenos Aires, but pressed into naval use. Captured intact at the end of the Falklands War and put into service for patrol, tug, and supply duties. Initially informally named the *Black Pig* because of her black paint scheme and general appearance. Has bow-thruster.

MOORING, SALVAGE, AND NET TENDERS

| ♦ 2 (+1) "Sal" class | Bldr: Hall Russell, Ltd., Aberdeen |
|----------------------|------------------------------------|
|----------------------|------------------------------------|

| | Laid down | L | In serv |
|-----------------|-----------|----------|---------|
| A 185 SALMOOR | 19-4-84 | 8-5-85 | 11-85 |
| A 186 SALMASTER | 17-9-84 | 12-11-85 | 6-86 |
| A 187 SALMAID | 29-6-84 | | 12-85 |

D: 1,700 tons (fl) **S:** 15 kts **Dim:** 77.10 (65.80 pp) \times 14.80 \times 3.80

Electron Equipt: Radar: . . . nav.

M: 2 Ruston-Paxman 8RKC diesels; 1 CP prop; 4,000 hp Man: 32 tot. (accommodations for 46) Range: . . .

Remarks: Ordered 29-1-84 as replacement for "Kin" class. Will be capable of mooring, buoy tending, salvage, diving support, and firefighting.

• 2 Pochard class

| | Bldr | L | In serv. |
|----------------------------|-------------------|---------|----------|
| A 164 GOOSANDER (ex-P 196) | Robb Caledon Ltd. | 12-4-73 | 10-9-73 |
| A 165 POCHARD (ex-P 197) | Robb Caledon Ltd. | 21-6-73 | 11-12-73 |



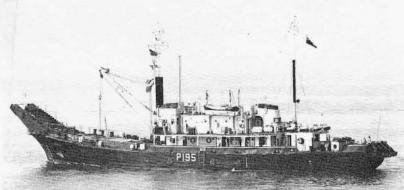
Goosander (A 164) — MARISAT added, two 40-ft. vans atop superstructure L. & L. Van Ginderen, 9-84

D: 750 tons (1,200 fl)
 S: 10 kts
 Dim: 55.4 (48.8 pp) × 12.2 × 5.5
 M: 2 Paxman RPHXM 16-cyl. diesels; 550 hp
 Range: 3,250/9.5
 Man: 26 tot.

REMARKS: RMAS-operated. All moorings, salvage, and boom vessels are multi-purpose and are capable of transporting and servicing moorings, performing salvage duties, and, in wartime, handling harbor-defense nets. Can dead-lift 200 tons over bow horns.

♦ 4 Wild Duck class

| | Bldr | L | In serv. |
|-----------------|--------------------|----------|----------|
| P 192 MANDARIN | Cammell Laird | 17-9-63 | 5-3-64 |
| P 193 PINTAIL | Camell Laird | 3-12-63 | 3-64 |
| P 194 GARGANEY | Brooke Marine Ltd. | 13-12-65 | 20-9-66 |
| P 195 GOLDENEYE | Brooke Marine Ltd. | 31-3-66 | 21-12-66 |



Goldeneye (P 195)

L. & L. Van Ginderen, 3-83

D: 850 tons (1,300 fl) (P 192, P 193: 941/1,622 tons) S: 10.8 kts
Dim: 57.86 (47.24 pp) × 13.0 × 3.2 (P 192, P 193: 60.23 × 12.22 × 4.21)
M: 2 Davey-Paxman 16-cyl. diesels; 1 CP prop; 50 hp (P 192, P 193: 750 hp)
Electric: P 194, P 195: 640 kw; P 192, P 193: 405 kw Range: 3,000/10
Man: 7 officers, 18 men

Remarks: RMAS-operated. *Pintail* has extra accommodations for divers in deckhouse abaft stack. 200-ton deadlift capacity over bow. Retain "P" (Patrol-series) pendant numbers.

• 3 "Kin" class (to be disposed of 1985-86)

| | Bldr | Laid down | L | In serv. |
|----------------|----------------------|-----------|---------|----------|
| A 232 Kingarth | Alex. Hall, Aberdeen | 16-7-43 | 22-5-44 | 28-12-44 |
| A 281 KINBRACE | Alex. Hall, Aberdeen | 20-4-44 | 17-1-45 | 30-4-45 |
| A 482 Kinloss | Alex. Hall, Aberdeen | | | 9-7-45 |



Kinbrace (A 281)

L. & L. Van Ginderen, 3-85

D: 950 tons (1,050 fl) **S:** 9 kts **Dim:** $54.0 \times 10.6 \times 3.6$ **M:** 1 Atlas Polar M44M diesel; 630 hp **Man:** 34 tot.

Remarks: RMAS-operated; 200-ton lift. Originally had reciprocating steam engines; diesels fitted 1964-67. 775 grt, 262 dwt. Sister *Uplifter* (A 507) stricken 10-85.

Note: The Insect-class fleet tender Scarab is also equipped as a moorings tender (10-ton lift).

SEAGOING TUGS

♦ 3 Roysterer class Bldr: C.D. Holmes, Hull

| | L | In serv. |
|-----------------|---------|----------|
| A 361 ROYSTERER | 20-5-70 | 25-4-72 |
| A 502 ROLLICKER | 29-1-71 | 2-73 |
| A 366 Robust | 7-10-71 | 6-4-64 |



Robust (A 366)

L. & L. Van Ginderen, 2-84

D: 1,630 tons (fl) **S:** 15 kts **Dim:** 54.8 (49.4 pp) \times 11.6 \times 5.5

M: 2 Mirrlees KMR6 diesels; 2 CP props; 4,500 hp

Range: 13,000/12 Electron Equipt: Radar: 2/Decca nav.

Man: 10 officers, 21 men (plus 10-man RN salvage party if needed)

Remarks: RMAS-operated; 50-ton bollard pull. Although designed for long-distance towing, have been used primarily in port service, at Devonport (A 502: Portland). Have heavy tripod mast, with after legs containing engine exhausts.

◆ 1 Typhoon class Bldr: H. Robb, Leith

L In serv. A 95 Typhoon 14-10-58 1960

D: 800 tons (1,380 fl) **S:** 17 kts **Dim:** 605. × 12.3 × 4.0

Electron Equipt: Radar: 1/978 M: 2 12-cyl. diesels; 1 CP prop; 2,750 hp

Remarks: RMAS-operated; 32-ton bollard pull. Based at Portland.

SEAGOING TUGS (continued)



Typhoon (A 95)

L. & L. Van Ginderen, 10-82

♦ 1 Confiance class Bldr: A. & S. Inglis, Glasgow

A 290 Confident (In serv. 1-56)



Confident (A 290)

L. & L. Van Ginderen, 12-82

D: 760 tons (fl) **S**: 13 kts **Dim**: $47.2 (42.7 \text{ pp}) \times 10.7 \times 3.4$ M: 4 Paxman HAXM diesels; 2 CP props; 1,800 hp

Man: 29 tot. plus 13 salvage

Remarks: RMAS-operated. Agile only unit with tall mainmast. Sister Confiance (A 290) struck, sunk as target 22-6-84. Sisters Agile (A 88), Advice (A 89), and Accord (A 90) stricken 1985, with A 290 soon to follow; replaced by second flight of Adept-class large harbor tugs.

SERVICE CRAFT

Note: Most service craft are operated by the Royal Maritime Auxiliary Service (RMAS), a civilian organization, with some operated by the reservists of the Royal Naval Auxiliary Service (RNXS). Increasingly, pendant numbers are being displayed; in the listings below, where the numbers are not borne, they are given in parentheses.

AMMUNITION TRANSPORTS

♦ 2 Throsk class

| | Bldr | Laid down | L | In serv. |
|------------------|----------------------|-----------|---------|----------|
| A 378 KINTERBURY | Cleland SB, Wallsend | 1980 | 8-11-80 | 20-1-81 |
| A 379 Throsk | Cleland SB, Wallsend | 25-8-76 | 31-3-77 | 20-9-77 |



Throsk (A 379)

L. & L. Van Ginderen, 5-85

D: 2,193 tons (fl) S: 14 kts Dim: 70.57 (64.31 pp) × 11.9 × 4.57 M: 2 Mirrlees-Blackstone diesels; 1 prop; 3,000 hp Range: 1,500/14; 5,000/10 Man: 10 officers, 22 men Electron Equipt: Radar: 1/Decca . . .

Remarks: RMAS-operated. Two holds, two 5-ton cranes; 1,150 dwt. Two cargo holds: 750 m3 total. Can transport 760 tons in holds plus 25 tons of cargo on deck. A 378 has improved accommodations and two electric cranes; A 379 has two cargo boom cranes. Sister St. George (in serv. 4-81) operated by Army's Royal Corps of Transport.

DEGAUSSING TENDERS

| ◆ 2 Magnet class | Bldr: Clelands, Wallsend | | | |
|------------------|--------------------------|----------|----------|--|
| | Laid down | L | In serv. | |
| A 114 MAGNET | 3-11-78 | 12-7-79 | 15-11-79 | |
| A 115 LODESTONE | 22-12-78 | 15-11-79 | 4-80 | |



Magnet (A 114)

L. & L. Van Ginderen, 7-84

D: 950 grt S: 12 kts Dim: 54.8 (50.0 pp) × 11.4 × 3.0 M: 2 Mirrlees-Blackstone ESL-6-MGR diesels, electric drive; 2 props; 1,650 hp Electric: 245 kw Fuel: 40 tons Range: 1,750/12 Man: 15 tot.

Remarks: Built to commercial standards. RMAS-operated. Use two 800-cell, 400-V battery banks and two variable-resistance capacitors to provide 4,000 amps DC for 40 seconds. Can deperm a 60,000-ton ship. A 115 completed a refit 21-12-84.

TORPEDO RETRIEVERS

| 4 Tornado class | Bldr: Hall Russell, Aberdeen | | | |
|-------------------------------------|------------------------------|---------|----------|--|
| | Laid down | L | In serv. | |
| A 140 TORNADO | 2-11-78 | 24-5-79 | 15-11-79 | |
| A 141 Torch | 5-12-78 | 7-8-79 | 12-2-80 | |
| A 142 Tormentor | 19-3-79 | 6-11-79 | 29-4-80 | |
| A 143 Toreador | 14-6-79 | 14-2-80 | 1-7-80 | |



Torch (A 141)

L. & L. Van Ginderen, 4-85

D: 660 tons (698 fl) **S:** 14 kts **Dim:** 47.47 (40.0 pp) × 8.53 × 3.0 M: 2 Lister-Blackstone ESL-8-MGR diesels; 2 props; 2,200 hp Fuel: 110 tons Range: 3,000/. . . Man: 17 tot.

REMARKS: RMAS-operated.

2 Torrent class

| | Bldr | L | In serv. |
|---------------|----------------------|---------|----------|
| A 127 TORRENT | Cleland SB, Wallsend | 29-3-71 | 10-9-71 |
| A 128 TORRID | Cleland SB, Wallsend | 7-9-71 | 1-72 |

D: 468 tons (685 fl) **S**: 11.5 kts **Dim**: 49.55 (44.2 pp) × 9,72 × 3.05 M: Paxman 16 RPHM diesel; 1 prop; 700 hp Electric: 300 kw Fuel: 49 tons Range: 1,500/11 Man: 19 tot.

TORPEDO RETRIEVERS (continued)



Torrid (A 128)

L. & L. Van Ginderen, 8-81

Remarks: Can stow 32 torpedoes in hold and 10 on deck and perform post-firing maintenance. Stern ramp for recovery. RMAS-operated.

• 1 converted customs craft

Endeavor Bldr: R. Dunston, Thorne (In serv. 1966)

D: 88 tons (fl) S: 10.5 kts Dim: 23.2 × 4.4 × 2.0

M: 1 Lister-Blackstone diesel; 337 hp

REMARKS: RMAS-operated. Resembles a small tug; cannot bring recovered torpedoes aboard. Also used as range safety craft at Portland.

♦ 3 torpedo recovery launches Bldr: R. Dunston, Thorne (In serv. 1979)

D: 15 tons **S**: 9 kts **Dim**: 13.8 × 2.98 × 0.76

M: 1 Perkins 6-354 diesel; 1 prop; 104 hp Man: 4 tot.

♦ 1 ex-RAF RTTL Mk 2-class former target-tow launch

OSPREY (ex-RAF 2770) (In serv. 1940s)



Osprey

L. & L. Van Ginderen, 10-82

D: 34.6 tons (fl) S: 30 kts Dim: 20.7 × 5.8 × 1.8

M: 2 Rolls-Royce Sea Griffon gasoline engines; 2 props; 2,200 hp Man: 9 tot.

• 1 ex-RAF 1300 series former air-sea rescue launch

L 72 (ex-RAF . . .) (In serv. 1955-56)

D: 28.3 tons (fl) **S:** 13 kts **Dim:** $19.2 \times 4.7 \times 1.5$ **M:** 2 Rolls-Royce C8 diesels; 2 props; 190 hp

DIVING TENDERS

• 5 modified Cartmel class Bldr: Gregson, Blyth

A 308 Ilchester A

A 311 IRONBRIDGE (ex-Invergordon)

A 309 Instow A 318 Ixworth

A 310 Invergordon

Remarks: RMAS-operated, except A 308 and A 309, by Navy. All in service 1974, except A 310, ordered 7-80. Details and appearance as for *Cartmel*-class tenders, except for a decompression chamber on deck forward, beneath a stowage platform for a Gemini dinghy. Can be used for harbor mine clearance. Displacement is 150 tons (fl).

• 1 Datchet class Bldr: Vosper, Singapore (In serv. 1968)

A 357 DATCHET

D: 70 tons (fl) S: 12 kts Dim: 22.86 × 5.79 × 1.22

Electron Equipt: Radar: 1/978

M: 2 Gray Marine diesels; 2 props; 500 hp Range: 500/12

REMARKS: Was RMAS, but now RN-manned; based at Plymouth.



Instow (A 309)

L. & L. Van Ginderen, 7-84



Datchet (A 357)

L. & L. Van Ginderen, 8-85

◆ 4 diver support craft Bldr: Tough, Teddington (In serv. 1981-82)

. D: 1183/103/11

D: 10 tons (ff) S: 8.5 kts Dim: 11.7 × 4.3 × 1.4 M: 1 Perkins 6-354.4 diesel; 120 hp Man: 2 crew, 12 divers

Remarks: Glass-reinforced plastic construction. One unit, unofficially named *Reclaim*, is attached to HMS *Vernon*.

TRAINING CRAFT

Note: The five Tracker-class patrol craft delivered in 1983 and the 14 P.2000-class patrol craft ordered in 7-84 are also intended for training, as are the patrol boats Peterel (P 262) and Sandpiper (P 263), the tenders Loyal Moderator (A 220), Clovelly (A 370), Cromarty (A 488), and Froxfield (A 354) of the Cartmel class, and Almouth (Y 13), Bembridge (A 101), and Aberdovey (Y 10), of the Aberdovey class; all are described elsewhere.

Former frigates Falmouth, Ashanti, and Blackpool are employed as training hulks to train Marine Engineering Mechanics at the Harbor Training Complex, Plymouth.

4 modified "Loyal" class Bldr: R. Dunston, Thorne Laid down L In serv. 23-7-81 18-9-80 2-3-82 A 92 MANLY A 94 MENTOR 20-10-80 7-10-81 6-4-82 30-1-81 A 97 MILBROOK 16-12-81 24-6-82 A 107 MESSINA 7-4-81 5-3-82 1-9-82



Manly (A 92)

French Navy, 6-82

TRAINING CRAFT (continued)

D: 128 tons (150 fl) S: 11.5 kts Dim: 24.00 × 6.40 × 2.33

Electron Equipt: Radar: 1/978 Fuel: 4.5 tons

M: 1 Lister-Blackstone ES4MGR diesel; 1 cycloidal prop; 330 hp

Range: 700/10 Man: 6 tot. (plus trainees)

Remarks: First three serve HMS Raleigh training facility; last for Royal Marine training.

• 3 target craft, ex-side-haul trawlers Bldr: Goole SB & Repair, Goole. (In serv. 1961)

Bullseye (ex-Tokio) Magpie (ex-Honda) Targe (ex-Erimo)



Bullseye-with tug alongside

L. & L. Van Ginderen, 7-85

D: 600 tons (fl) S: 12 kts Dim: 35.85 × 7.73 × 3.70 M: 1 Mirrlees 6-cyl. diesel; 1 prop; 700 hp Fuel: 57 tons Man: 1 officer, 12 men

Remarks: 273 grt/91 nrt. First two acquired 6-82 and third in 6-84 for use as radio-controlled targets at Portland. Royal Navy-manned. "T.V." on hull before name means "Target Vessel." Radar corner reflectors mounted forward, and television camera placed on stub mast forward of stack. *Magpie* is the controller unit and has a large radome atop the pilothouse.

• 1 navigational training tender

Bldr: Vosper (In serv. 1964)

TREVOSE



Trevose

L. & L. Van Ginderen, 7-80

D: 74 tons (fl) S: 12 kts Dim: 21.9 × . . . × . . . M: 2 diesels; 2 props; . . . hp

Remarks: Transferred from the Royal Corps of Transport 1981 for Royal Naval Reserve training.

• 3 training tenders (In serv. 1944-46)

OLIVER TWIST SMIKE URIAH HEEP

D: . . . S: 8 kts Dim: 15.2 × . . . × . . . M: 1 diesel; . . . hp

Remarks: 20 grt. Wooden-hulled fishing-boat-type craft transferred from the Royal Corps of Transport in 1974-81 for use as Royal Naval Reserve training tenders.

Note: The last "Ford"-class Seaward Defence Boat in Royal Navy service, Droxford (P 3113), used in recent years for naval reserve officer training, was stricken 10-83. Stern-haul trawler Northella, chartered 10-83 for six months' training duties, was returned to her owners in 4-84. Oceanographic research craft Sarsia, chartered 3-82 for reserve officer training, was also returned. Trawler-research vessel G.A. Reay (999 grt, 69.15 × 12.10 × 5.07, 2,500 hp, 19.5 kts) was chartered 26-9-84, but was returned to her owners in 1985 and leased to the Indian government. Waterwitch (M 2720), a former inshore minesweeper of the "Ham" class later used for survey work, and from 1981 for reserve officer cadet training, was stricken 4-3-85.



Uriah Heep

L. & L. Van Ginderen, 8-83

FUEL LIGHTERS

• 6 Oil class Bldr: Appledore SB (All in serv. 1979)

| | L | | 1.6 |
|-----------------|---------|-----------------|----------|
| (Y 21) Oilpress | 10-6-68 | (Y 24) OILFIELD | 5-9-68 |
| (Y 22) OILSTONE | 11-7-68 | (Y 25) Oilbird | 21-11-68 |
| (Y 23) OILWELL | 20-1-69 | (Y 26) OILMAN | 18-2-69 |



Oilpress (Y 21)

Skyfotos, 8-82

D: 250 tons (535 ff) S: 10 kts Dim: 42.26 (39.62 pp) × 7.47 × 2.51 Electron Equipt: Radar: 1/978

M: 1 Lister-Blackstone ES-6-MGR diesel; 405 hp Electric: 225 kw Fuel: 15 tons Range: 1,500/10 Man: 4 officers, 7 men

REMARKS: First three carry diesel fuel and are 247 tons (527 fl); other three carry fuel oil. RMAS-operated.

WATER LIGHTERS

• 7 Water class Bldr: Drypool, Hull, except A 146: R. Dunston, Hessle

| | In serv. | | In serv. |
|-----------------|----------|------------------|----------|
| Y 17 WATERFALL | 1967 | Y 30 Watercourse | 1974 |
| Y 18 WATERSHED | 1967 | Y 31 Waterfowl | 25-5-74 |
| Y 19 Waterspout | 1967 | A 146 WATERMAN | 6-78 |
| Y 20 Waterslide | 1968 | | |



Waterfowl (Y 31)

L. & L. Van Ginderen, 7-84

WATER LIGHTERS (continued)

D: 344 tons (fl) S: 11 kts Dim: 40.02 (37.5 pp) × 7.5 × 2.44

Electron Equipt: Radar: 1/978

M: 1 Lister-Blackstone ERS-8-MGR diesel; 600 hp Electric: 155 kw

Range: 1,500/11 Man: 11 tot.

Remarks: RMAS-operated. Built 1966-73. Carry 150 tons water cargo. Resemble "Oil" class. Y 30, Y 31, and A 146 have deckhouse over after cargo tanks, others do not.

GENERAL-PURPOSE TENDERS

♦ 7 100-foot "Insect" class Bldr: C.D. Holmes, Beverley (In serv. 1970-73)

A 216 BEE A 230 COCKCHAFER A 229 CRICKET A 239 GNAT

CHAFER A 253 LADYBIRD
A 263 CICADA

A 272 Scarab



Ladybird (A 253)

L. & L. Van Ginderen, 7-85

D: 213 tons (450 fl) **S:** 10.5 kts **Dim:** 34.06 (30.48 pp) × 8.53 × 3.2

Electron Equipt: Radar: 1/978

M: 1 Lister-Blackstone ERS-8-HGR diesel; 660 hp Man: 10 tot.

REMARKS: RMAS-operated; 200 tons cargo, one 3-ton crane. Scarab, with 5-ton winch and bow horn, is used as a moorings tender, Gnat and Ladybird transport ammunition.

♦ 8 "Loyal" class Bldr: R. Dunston, Thorne

| | In serv. | | In serv. |
|-----------------------|----------|-------------------------|----------|
| A 157 LOYAL HELPER | 1978 | A 161 LOYAL MEDIATOR | 1978 |
| A 158 SUPPORTER | 1977 | A 220 Loyal Moderator | 1973 |
| (ex-Loyal Supporter) | | A 1770 LOYAL CHANCELLOR | 1972 |
| A 159 LOYAL WATCHER | 1977 | A 1771 LOYAL PROCTOR | 1973 |
| A 160 LOYAL VOLUNTEER | 1977 | | |



Loyal Mediator (A 161)

L. & L. Van Ginderen, 7-83

REMARKS: RNXS-operated. Details as for Cartmel class, but equipped to carry up to 200 personnel in cargo hold for short distances (except Loyal Moderator, training craft, 12 extra berths instead). Sisters Vigilant (P 254, ex-Loyal Factor, A 382) and Alert (P 252, ex-Loyal Governor, A 510) are operated by the Royal Navy as patrol craft off Ulster. A 158 operates as a stores carrier from Belfast. Four very similar craft built as training tenders; see above.

| 32 | Cartmel | c | las |
|----|---------|---|-----|
| | | | |

Bldr: (A): Isaac Pimblott & Sons, Northwich; (B): C.D. Holmes, Beverley; (C): John Lewis, Aberdeen; (D): R. Dunston, Thorne; (E): J. Cook, Wivenhoe

| | Bldr | In serv. | | Bldr | In serv. |
|-----------------|------|----------|-----------------|------|----------|
| A 350 CARTMEL | A | 1968 | A 381 CRICKLADE | В | 1970 |
| A 389 CLOVELLY | A | 1971 | A 488 Cromarty | C | 1970 |
| A 391 CRICCIETH | A | 1971 | A 363 DENMEAD | В | 1970 |

| | Bldr | In serv. | | Bldr | In serv. |
|-----------------|------|----------|------------------|------|----------|
| A 490 DORNOCH | C | 1970 | A 1769 HAMBLEDON | D | 1972 |
| A 393 Dunster | D | 1970 | A 1768 HARLECH | D | 1972 |
| A 353 ELESTONE | E | 1969 | A 1776 HEADCORN | D | 1972 |
| A 277 ELSING | E | 1970 | A 1767 HEVER | D | 1972 |
| A 355 EPWORTH | E | 1970 | A 1772 HOLMWOOD | D | 1973 |
| A 274 ETTRICK | E | 1970 | A 1773 HORNING | D | 1973 |
| A 348 FELSTED | D | 1970 | A 208 Lamlash | D | 1973 |
| A 394 FINTRY | C | 1970 | A 211 LECHLADE | D | 1973 |
| A 341 FOTHERBY | D | 1970 | A 207 Landovery | D | 1973 |
| A 354 Froxfield | D | 1970 | A 83 MELTON | D | 21-8-81 |
| A 365 FULBECK | В | 1969 | A 84 Menai | D | 4-11-81 |
| A 392 GLENCOE | A | 1971 | A 87 Meon | D | 9-11-82 |
| A 402 Grasmere | C | 1970 | A 91 MILFORD | D | 11-1-83 |



Clovelly (A 389)

L. & L. Van Ginderen, 7-85

D: 143 tons (fl) S: 10.5 kts Dims: 24.38 (22.86 pp) × 6.40 × 1.98 Electron Equipt: Radar: 1/978 (not on all)

M: 1 Lister-Blackstone ERS-4-MGR diesel; 330 hp Electric: 106 kw Range: 700/10 Man: 6 tot.

REMARKS: RMAS-operated, except Ettrick and Elsing, which are RN-manned and used for patrol at Gibraltar. Improved version of Aberdovey class; 25 tons cargo. First two, 5.49-meter beam. Carry stores, personnel, food. Can tow. Clovelly, Cromarty, Froxfield, Hever, and Headcorn are also used for training, and Dornoch and Fotherby have been used as diving tenders. The last four were ordered 25-2-80. Sister Cawsand (A 351) for sale 10-85.

◆ 8 Aberdovey class Bldr: (A): Issac Pimblott & Sons, Northwich; (B): J. S. Doig, Grimsby

| | Bldr | In serv. | | Bldr | In serv. |
|----------------|------|----------|------------------|------|----------|
| Y 10 ABERDOVEY | A | 1963 | A 100 Beddgelert | В | 1967 |
| Y 13 ALNMOUTH | A | 1966 | A 101 Bembridge | В | 1968 |
| Y 14 APPLEBY | A | 1967 | A 103 Bibury | В | 1969 |
| A 99 Beaulieu | В | 1966 | A 104 BLAKENEY | В | 1970 |



Bibury (A 103)

L. & L. Van Ginderen, 7-83

D: 117.5 tons (fl) **S:** 10.5 kts **Dim:** 24.16 (22.86 pp) × 5.79 × 1.68 **Electron Equipt:** Radar: 1/978 or Decca 150

M: 1 Lister-Blackstone ER-4-MGR diesel; 225 hp Range: 700/10 Man: 6 tot.

Remarks: RMAS-operated, except for Y 10, RNXS. Carry 25 tons cargo. Alnmouth and Bembridge used for Sea Cadet Corps training; Aberdovey used for training Royal Marines; Abinger (Y 11) attached to Aberdeen University for officer candidate training, was paid off in 1985. Sisters Alness (Y 12), Ashcott (Y 16), and Brodick (A 105) for sale 10-85.

GENERAL-PURPOSE TENDERS (continued)

♦ 1 converted ex-stern trawler

Bldr: P.K. Harris, Appledore (In serv. 1962)

A 362 DOLWEN (ex-Hector Gull)



Dolwen (A 362)

L. & L. Van Ginderen, 1980

D: 602 tons (fl) **S**: . . . kts **Dim**: 39.65 (36.73 pp) \times 9.12 \times 4.40 Electron Equipt: Radar: 1/1006

M: 1 National FSSM-6 diesel; 1 CP prop; 1,160 hp

Remarks: Gallows at stern for laying buoys; used as air bombardment safety range craft for the Royal Aircraft Establishment, Aberforth. Operated by a private contractor.

♦ 1 "Ham"-class former inshore minesweepers

(M 2781) Portisham



Portisham (M 2781)

L. & L. Van Ginderen, 8-85

D: 115-120 tons (150-160 fl) **S:** 14 kts **Dim:** $32.47\times6.10\times1.75$ **Electron Equipt:** Radar: 1/978 **Range:** 2,350/9

M: 2 Paxman YHAXM 12-cyl. diesels; 2 props; 1,100 hp Electric: 108 kw Fuel: 15 tons Man:

Remarks: Portisham, RNXS-operated, is to be replaced in 1986 by P.2000-class training patrol boat. Built 1953-57. Carries passengers and stores. M 2726 temporarily used as an inshore survey ship, 1978-79. Sisters Shipham (M 2726) and Sandringham (M 2791) stricken 10-85.

13 motor fishing vessel tenders

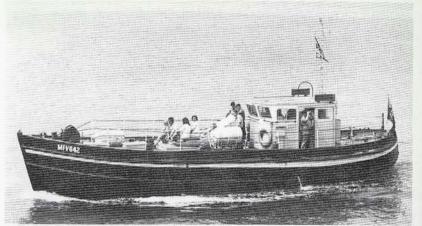
6 store carriers: MFV.7 (1943), MFV.15 (1942), MFV.96 (1944), MFV.256 (1944), MFV.740 (1945), MFV.911 (1945) 3 general-purpose: MFV.140 (1946), MFV.175 (1945), MFV.816 (1945)

4 diving tenders: MFV.119 (1944), MFV.642 (1945), MFV.775 (1945), MFV.1077 (1944)



MFV.15 - stores carrier

L. & L. Van Ginderen, 10-81



MFV.642 - diving tender

L. & L. Van Ginderen, 7-84



MFV.119 - diving tender

G. Gyssels, 4-83

Remarks: Wooden-hulled fishing boats of varying characteristics. Most have "doubleended" hulls, engines and pilothouse aft.

LARGE HARBOR TUGS

◆ 7 (+2) Adept-class "Twin-Unit Tractors" Bldr: R. Dunston, Hessle

| | Laid down | L | In serv. |
|-----------------|-----------|---------|----------|
| A 221 FORCEFUL | 30-3-84 | | 29-3-85 |
| A 222 NIMBLE | 27-4-84 | 21-3-85 | 25-6-85 |
| A 223 POWERFUL | 21-6-84 | 3-6-85 | 85 |
| A 224 ADEPT | 22-7-79 | 27-8-80 | 28-10-80 |
| A 225 Bustler | 28-11-79 | 20-2-80 | 15-4-81 |
| A 226 Capable | 5-9-80 | 2-7-81 | 11-9-81 |
| A 227 CAREFUL | 15-1-81 | 12-1-82 | 12-3-82 |
| A 228 FAITHFUL | 30-11-84 | | |
| A 231 Dexterous | 18-4-85 | | |



Forceful (A 221)

L. & L. Van Ginderen, 7-85

D: 450 tons **S:** 12.5 kts **Dim:** 38.82 (37.00 pp) × 9.10 × 4.20 (3.40 mean) Electron Equipt: Radar: 1/Decca .

M: 2 Ruston 6 RKCM diesels; 2 Voith-Schneider vertical-cycloidal props; 2,640 hp Electric: 294 kw Fuel: 49 tons Man: 12 tot.

Remarks: RMAS-operated. Ordered 22-2-79. 28-ton bollard pull. Also used for coastal towing. The five later units were ordered 8-2-84 to replace the Confiance-class seagoing tugs.

LARGE HARBOR TUGS (continued)

| ♦ 18 Dog class | Bldrs: Various (In ser | v. 1962-72) |
|-------------------|------------------------|------------------|
| (A 106) ALSATIAN | (A 162) Elkhound | (A 188) Pointer |
| (A 327) Basset | (A 326) FOXHOUND | (A 182) Saluki |
| (A 126) CAIRN | (ex-Boxer) | (A 187) SEALYHAM |
| (A 328) COLLIE | (A 169) Husky | (A 189) Setter |
| (A 330) Corgi | (A 168) Labrador | (A 250) Sheepdog |
| (A 129) DALMATIAN | (A 180) Mastiff | (A 201) SPANIEL |
| (A 155) DEERHOUND | 11, | |



Dalmatian (A 129) - no radar, low pilothouse

L. & L. Van Ginderen, 7-83



Setter (A 189) - high pilothouse with windows, Decca radar

G. Gyssels, 10-84

D: 206 tons (248 fl) **S:** 12 kts **Dim:** 28.65 (25.91 pp) × 7.72 × 3.51 **Electron Equipt:** Radar: 1/978

M: 2 Lister-Blackstone ERS-86-MGR diesels; 1 prop; 1,320 hp

Electric: 80 kw Man: 8 tot.

Remarks: RMAS-operated. 18.7-ton bollard pull. Foxhound renamed 22-10-77. Appearances vary, some having streamlined upper pilothouse structures, others higher pilothouses. Sister Airedale (A 102) sold commercially at Gibraltar, 12-84.

MEDIUM HARBOR TUGS

◆ 8 Felicity-class water tractors 196, A 198: Hancock, Pembroke)

Bldrs: R. Dunston, Thorne (A 148, A 152, A

| | In serv. | | In serv. |
|------------------|----------|--------------------|----------|
| (A 112) FELICITY | 1968 | (A 150) Genevieve | 29-10-80 |
| (A 147) Frances | 5-80 | (A 152) GEORGINA | 1973 |
| (A 148) FIONA | 1973 | (A 196) GWENDOLINE | 1974 |
| (A 149) FLORENCE | 8-8-80 | (A 198) HELEN | 1974 |

D: 220 tons (fl) S: 10.2 kts Dim: 22.25 (20.73 pp) × 6.40 × 2.97 (2.10 hull) M: 1 Lister-Blackstone ERS-8-MGR diesel; cycloidal prop; 615 hp Fuel: 12 tons Range: 1,800/8 Man: 6 tot.

Remarks: RMAS-operated, 138 grt. 5.9 to 6.1-ton bollard pull. Final three ordered 13-12-78.

| ♦ 8 modified "Girl" R. Dunston, Thorn | | Bldrs: (A | A): Isaac Pimblott & So | ons, North | wich; (B): |
|--|------|-----------|-------------------------|------------|------------|
| 1 2 | Bldr | In serv. | | Bldr | In serv. |
| (A 210) Charlotte | A | 1966 | (A 156) DAPHNE | В | 1969 |
| (A 217) CHRISTINE | A | 1966 | (A 252) Doris | В | 1969 |
| (A 218) CLARE | A | 1966 | (A 173) Dorothy | В | 1969 |
| (A 145) Daisy | В | 1968 | (A 178) EDITH | В | 1969 |



Dorothy (A 173)

L. & L. Van Ginderen, 7-84

D: 100 tons (fl) **S:** 10.5 kts **Dim:** $20.57 \times 6.25 \times 2.9$

Electron Equipt: Radar: 1/978 or none

M: 1 Lister-Blackstone ERS-8-MGR diesel; 495 hp Range: 900/10 Man: 4 tot.

Remarks: RMAS-operated. Clare manned by the RN as a patrol craft at Hong Kong until 31-12-81. Celia (A 206) sold commercially, 1971. 50 grt; 6.5-ton bollard pull.



Frances (A 147)

L. & L. Van Ginderen, 7-83

◆ 1 "Girl" class Bldrs: (A) P.K. Harris; (B) R. Dunston, Thorne

(A 121) AGNES Bldr In serv.

D: 66.5 tons (81 fl) **S:** 10 kts **Dim:** 18.75 (17.3 pp) \times 5.11 \times 2.36

M: 1 Lister-Blackstone ERS-6-MGR diesel; 495 hp Range: 980/9.8 Man: 4 tot.

REMARKS: RMAS-operated. 40 grt; 6.5-tons bollard pull. Sisters Agatha (A 116), Alice (A 113), Audrey (A 117), and Barbara (A 324) stricken 1982. Betty (A 232) was stricken 1983. Brenda (A 335) and Bridget (A 322) transferred to the Royal Corps of Transport, 19-8-83.

SMALL HARBOR TUGS

 ♦ 12 Triton-class water tractors
 Bldr: R. Dunston, Thorne (In serv. 1972-73)

 (A 181) IRENE
 (A 166) KATHLEEN
 (A 175) MARY

 (A 183) ISABEL
 (A 170) KITTY
 (A 199) MYRTLE

 (A 190) JOAN
 (A 172) LESLEY
 (A 202) NANCY

 (A 193) JOYCE
 (A 174) LILAH
 (A 205) NORAH

D: 107.5 tons (fl) S: 7.75 kts Dim: 17.65 (16.76 pp) × 5.26 × 2.8 M: 1 Lister-Blackstone ERS-4-M diesel; cycloidal prop; 330 hp Man: 6 tot.

Remarks: RMAS-operated; 50 grt; 3-ton bollard pull. Voith vertical cycloidal prop to provide instant mobility and full power in any direction.

SMALL HARBOR TUGS (continued)



Lilah (A 174) and cargo barge 1109(3)

L. & L. Van Ginderen, 7-84

FLOATING DRYDOCKS

Note: "AFD" indicates Admiralty Floating Dock

AFD 60 Bldr: Portsmouth Dockyard (In serv. 1966)

Capacity: 13,500 tons Dim: 149.7 × 28 (17.7 wide × 10.7 depth interior)

AFD 59 Bldr: Portsmouth Dockyard (In serv. 1960)

Capacity: 12,000 tons $Dim: 148.4 \times 23.5$ (15.5 wide \times 10.4 depth interior)

AFD 58 Bldr: Furness Shipbldg, Teeside (In serv. 1957)

Capacity: 8,000 tons Dim: 137.2 × 28.0 (18.9 wide × 6.4 depth interior)

AFD 26 Bldr: Bombay Dockyard (In serv. 1944)

Capacity: 7,750 tons Dim: 115.8 × 28.0 (15.2 wide by 5.6 depth interior)



AFD 26 - with tug Foxhound

L. & L. Van Ginderen, 9-84

Note: AFD 26 is at Rosyth, AFD 58 at Devonport, AFD 59 at Barrow-in-Furness, and AFD 60 at the Gareloch. Most Royal Navy dockings are performed at permanent, fixed dry docks at Royal Dockyards and, recently, at private repair facilities.

HARBOR SERVICE CRAFT

Note: Little information is available on the hundreds of smaller self-propelled service craft or on non-self-propelled units such as cargo, fuel, and water barges in service with the Royal Navy, Royal Dockyards, or the Royal Maritime Auxiliary Service. Some typical examples and one recent class are shown below.

• 7 harbor launches

Bldr: R. Dunstan, Hessle (In serv. 1981)



Harbor Service Launch 8093

Dunston, 1981

D: 40 tons (fl) S: 9.9 kts Dim: 13.90 × 4.50 × 1.21 M: 1 Dorman 8 JTM diesel; 1 prop; 270 hp Man: 3 tot.

REMARKS: Can carry 40 passengers or act as tug; 2-ton bollard pull.



Portsmouth Dockyard service launch D 57

L. & L. Van Ginderen, 7-84



Portland-area service launch Penguin

L. & L. Van Ginderen, 7-84



Power Barge M.A.C. 1002, at Portsmouth

L. & L. Van Ginderen, 7-81



Harbor Launch HL 56154 at Plymouth

L. & L. Van Ginderen, 7-81

MINISTRY OF DEFENCE

Note: In the wake of the hostilities following the Argentine invasion of the Falklands, the Ministry of Defence has had to maintain a sizeable fleet of chartered merchant ships to support the forces garrisoning the islands. The more important of these ships on longer-term charter or owned outright by the M.O.D. are described below.

TRANSPORTS

 1 former vehicle/passenger ferry serv. 12-74)

Bldr: Cammell-Laird, Birkenhead (In

KEREN (ex-St. Edmund)

D: Approx. 8,100 tons (fl) S: 21 kts Dim: 130.08 (119.51 pp) × 22.64 × 5.20

Electron Equipt: Radar: 2/navigational

M: 4 Stork-Werkspoor 8-cyl. diesels; 2 CP props; 20,400 hp

Electric: 2,500 kw Man: 14 officers, 59 crew, plus 671 passengers

TRANSPORTS (continued)



Keren

L. & L. Van Ginderen, 6-85

Remarks: 8,987 grt/1,830 dwt. Chartered during Falklands War from Sea Link. Purchased 15-2-83. Due to labor disputes was briefly commissioned as HMS Keren 31-3-83 to 8-4-83. Operated by civil contractor. Used on Ascension to Port Stanley run. Helicopter deck aft, MARISAT and improved air-conditioning added. Bowthruster. Blue hull, white upperworks, buff stack. Laid up mid-1985 at Portsmouth.

BARRACKS BARGES

2 former oilfield support barges

Bldr: Götaverken, Sweden (In serv. 1982)

SAFE DOMINIA SAFE ESPERIA

Remarks: 99.7-m overall. Berths for 940. Chartered 28-10-82 and 16-3-83, respectively, and carried to Falklands aboard "Flo-Flo" transports.

 1 former oilfield support barge Wales (In serv. 1977) Bldr: Dredge and Marine Ltd., Pernryn,

PURSUIVANT (ex-Bargeman)

D: . . . **Dim:** $91.98 (91.45 \text{ pp}) \times 28.5 \times 4.85$

Remarks: 4,793 grt. Purchased 1982 and converted to accommodate 800 personnel by SLP Fabricating Eng., Lowestoft; relaunched and placed in service 12-7-83.

ROYAL ARMY ROYAL CORPS OF TRANSPORT

MEDIUM LANDING SHIPS

♦ 2 Ardennes-class logistic landing craft Bldr: Brooke Marine, Lowestoft

Laid down L In serv. L 4001 Ardennes 27-8-75 29-7-76 1977 L 4003 Arakan 16-2-76 23-5-77 9-6-78



Ardennes (L 4001) - with deck load of containers

L. & L. Van Ginderen, 2-85

D: 870 tons (1,663 fl) **S:** 10.0 kts **Dim:** 72.16 (69.95 pp) \times 15.03 \times 2.01 **M:** 2 Mirrlees-Blackstone GWSL 8-MGR 2 diesels; 2 props; 2,000 hp **Fuel:** 150 tons **Range:** 2,500/10 **Man:** 4 officers, 31 men

Remarks: Replacements for the LCT(8) class, operated by the Royal Corps of Transport. Can carry 5 70-ton tanks or 24 standard 20-foot containers (254 tons) as well as 6 officers and 28 troops. No armament.

LANDING CRAFT

• 5 Arromanches class

| | Bldr: | L | In serv. |
|-------------------|------------------------------|----------|----------|
| L 105 Arromanches | Brooke Marine, Lowestoft | 6-1-81 | 31-7-81 |
| L 106 Antwerp | Brooke Marine, Lowestoft | 9-3-81 | 14-8-81 |
| L 107 Andalsnes | James & Stone, Brightlingsea | 16-3-84 | 22-5-84 |
| L 108 Abbeville | James & Stone, Brightlingsea | 28-8-84 | 9-11-84 |
| L 109 Akyab | James & Stone, Brightlingsea | 20-11-84 | 21-12-84 |



Akyab (L 109)

L. & L. Van Ginderen, 3-85

D: 290 tons (fl) S: 9.25 kts Dim: 33.26 (30.00 pp) × 8.30 × 1.45 loaded Electron Equipt: Radar: 1/Decca 110

M: 2 Doorman 8 JTCWM diesels; 2 props; 660 hp Range: 900/9 Fuel: 17 tons Man: 6 tot.

Remarks: First two ordered 18-3-80 to begin replacement of *Avon* class. Next three ordered 31-3-83, and four more are planned. L 105 and L 106 displace 282 tons (fl) and can make 10 kts at light load; they operated in the Falklands 1982-83 and are now based at Cyprus.

• 8 Avon class

Bldr: Saunders-Roe, Isle of Wight (In serv. 1961-67)

RPL 03 CLYDE RPL 04 DART RPL 05 EDEN RPL 06 FORTH RPL 09 ITCHEN RPL 10 KENNET RPL 11 LODDEN RPL 12 MEDWAY



Lodden (RPL 11)

G. Arra, 1977

D: 61 tons (100 fl) S: 8 kts Dim: 22.0 × 6.1 × 1.7 M: 2 diesels; 2 props; 870 hp Man: 6 tot.

Remarks: RPL—Ramped Powered Lighter. Two-deck superstructure aft. RPL 03, 04, 09 at Hong Kong, others at Belize.

CARGO SHIP

1 Throsk class

Bldr: Appledore SB

A 382 St. George

Laid down 9-11-80 L 3-81 In serv. 7-81



St. George (A 382)

L. & L. Van Ginderen, 7-83

D: 2,193 tons (fl)
 S: 14 kts
 Dim: 70.57 (64.31 pp) × 11.90 × 4.57
 M: 2 Mirrlees-Blackstone diesels; 1 prop; 3,000 hp
 Range: 1,500/14; 5,000/10
 Electron Equipt: 1/1006
 Man: 10 officers, 22 men

Remarks: Sister to RMAS-operated munitions carriers Kinterbury and Throsk, with improved accommodations. Two holds, two 5-ton cranes; 1,150 dwt. Ordered 2-10-79.

SERVICE CRAFT

♦ 2 Spitfire-class range safety boats Bldr: James & Stone, Brightlingsea Alfred Herring, V.C. (In serv. 1978) Michael Murphy, V.C. (In serv. 10-3-83)



Michael Murphy, V.C.

L. & L. Van Ginderen, 3-83

D: 48 tons (60 fl) S: 22 kts Dim: 23.70 × 5.50 × 1.50 M: 2 Paxman 8YJCM4 diesels; 2 props; 2,100 hp Man: 9 tot.

Remarks: Sisters to RAF target tow launches. Herring operates in Outer Hebrides at Royal Artillery Range, Murphy at Cyprus.

10 (+3) Samuel Morley, V.C.-class range safety craft
 Bidrs: Morley:
 Fairey Marine, Hamble (except Dalton, Masters, Hughes: A.R.P. Whitstable); others:
 Halmatic, Havant.

| | In serv. | | In serv. |
|-----------------------|----------|------------------------|----------|
| SAMUEL MORLEY, V.C. | 1980 | SIR WILLIAM ROE | 1983 |
| JAMES DALTON, V.C. | 1981 | SIR REGINALD KERR | 17-3-83 |
| RICHARD MASTERS, V.C. | 1981 | SIR HUMPHREY GALE | 8-4-83 |
| JOSEPH HUGHES, G.C. | 1981 | GEOFFREY RACKHAM, G.C. | |
| SIR PAUL TRAVERS | 20-10-82 | WALTER CLEAL, G.C. | 4 4 4 |
| SIR CECIL SMITH | 6-7-82 | SIR EVAN GIBB | |
| SIR JOHN POTTER | 24-8-82 | | |



Sir Humphrey Gale

L. & L. Van Ginderen, 7-84

D: 20.6 tons (23.6 fl)
S: 20 kts
Dim: 14.81 × 4.65 × 1.30
M: First four: 2 Rolls-Royce C8M410 diesels; 2 props; 820 hp. Remainder: 2 Fiat 828SM diesels; 2 props; 880 hp
Range: 320/17
Electron Equipt: Radar: 1/Decca. . . Man: 3 tot.

Remarks: Glass-reinforced plastic hulls by Halmatic, Havant. Hughes and Potter based at Hong Kong. Design based on "Talisman 49" hull. Last three ordered 11-4-85

♦ 1 navigational training craft Bldr: Richards Ironworks (In serv. 1944)

YARMOUTH NAVIGATOR

D: 140 tons S: 8 kts Dim: 29.0 × . . . × . . .

♦ 8 workboats Bldr: Anderson, Rigden & Perkins, Whitstable

HL 1 through HL 7 (In serv. 2-3-81) HL 8 (In serv. 2-6-81)

D: 8 tons (fl) S: 11 kts Dim: 11.2 × 3.5 × . . . M: 1 Perkins T6-354 M diesel; 129 hp Man: 2 tot.

Remarks: Glass-reinforced plastic construction. Five also built for RN.



Yarmouth Navigator

L. & L. Van Ginderen, 11-82

5 general-purpose workboats (In serv. 1966-71)

WB 03 Bream WB 04 Barbel WB 05 Roach WB 06 Perch WB 07 Pike



Roach (WB 05)

Walles Foto, 7-84

D: 19 tons (fl) S: 8 kts Dim: 14.3 × . . . × . . .

• 5 command and control craft (In serv. 1971)

L 01 Petrel L 02 Tern L 03 Fulmar L 04 Skua L 05 Shearwater



Shearwater

L. & L. Van Ginderen, 7-83

D: 12 tons (fl) S: 15 kts Dim: 12.5 × . . . × . . .

♦ 2 air-cushion vehicles Bldr: Air Vehicles, Cowes

SH 01 (In serv. 11-5-82) SH 02 (In serv. 15-7-82)

D: 1 ton (fl) S: 34 kts Dim: 8.45 × 4.57 × 2.18 (high)
 M: 1 diesel; 1 air screw; 1 lift fan; 200 hp

Crew: 1, plus 11 passengers

◆ 2 ex-Royal Navy "Girl"-class tugs Bldr: R. Dunston, Thorne (In serv.

(A 323) BRIDGET (A 335) BRENDA

D: 66.5 tons (81 fl)
 S: 10 kts
 Dim: 18.75 (17.30 pp) × 5.11 × 2.36
 M: 1 Lister-Blackstone ERS-6-MGR diesel; 1 prop; 495 hp
 Range: 980/9.8
 Man: 4 tot.

Remarks: Transferred from Royal Navy 19-8-83. Used for handling ammunition barges at Marchwood. 6.5-ton bollard pull. Sister Agnes (A 121) is naval.

SERVICE CRAFT (continued)



Bridget (A 322)

G. Arra

ROYAL AIR FORCE MARINE BRANCH

PERSONNEL (1984): 430 RAF, 80 civilian

LONG-RANGE RECOVERY AND SUPPORT CRAFT (LRRSC)

Note: Craft have black hulls, grey upperworks, RAF roundel on hull sides and top of pilothouse. The Royal Air Force Marine Branch, established 1-4-1918, is to be disbanded 8-4-86, with affoat assets going to the other services.

• 2 Seal class

| | Bldr | In serv. |
|--------------|-----------------------------------|----------|
| 5000 SEAL | Brooke Marine, Lowestoft | 8-67 |
| 5001 SEAGULL | Fairmile Const., Berwich-on-Tweed | 1970 |



Seal (5000)

L. & L. Van Ginderen, 6-83

D: 159 tons (fl) S: 21 kts Dim: 36.6 (33.8 pp) × 7.0 × 2.0 Electron Equipt: Radar: 1/978

M: 2 Paxman 16 YJCM diesels; 2 props; 4,000 hp Electric: 110 kw Fuel: 31 tons Range: 2,200/12 Man: 2 officers, 15 men

Remarks: Design similar to Royal Navy's Kingfisher-class patrol boats. Used for search-and-rescue, target towing, and recovering guided missiles and other airdropped ordnance. Sister Sea Otter (5002) transferred to Royal Navy 30-10-84 and renamed Redpole.

RESCUE AND TARGET-TOWING LAUNCHES (RTTL)

| • 6 Spitfire (RTTL Mk 3) class | Bldr: James & Stone, Brightlingsea |
|--------------------------------|------------------------------------|
|--------------------------------|------------------------------------|

| | In serv. | | In serv. |
|---------------|----------|-----------------|----------|
| 4000 Spitfire | 1972 | 4005 Hurricane | 1980 |
| 4003 Halifax | 1977 | 4006 LANCASTER | 1981 |
| 4004 HAMPDEN | 1980 | 4007 Wellington | 25-5-81 |

D: 48 tons (60 fl) **S:** 22 kts **Dim:** 23,70 (22.15 wl) \times 5.50 \times 1.50 **Electron Equipt:** Radar: 1/Decca. . .

M: 2 Paxman 8YJCM4 diesels; 2 props; 2,000 hp Electric: 30 kVA Fuel: 10 tons Range: 500/21; 1,000/15 Man: 1 officer, 8 men

REMARKS: Spitfire is 20.6-m overall and has two side-by-side stacks; the series-construction units discharge exhaust through ports in the stern. Sisters Sunderland (4001) and Stirling (4002) to Royal Navy 8-85 as Hart (P 257) and Cormorant (P 256).



Hampden (4004)

COLONEL TEMPLAR (ex-Criscilla)

L. & L. Van Ginderen, 7-82

♦ 1 aviation trials support ship Bldr: Hall Russell, Aberdeen (In serv. 1966)



Colonel Templar

L. & L. Van Ginderen, 11-82

D: . . . S: . . . Dim: 56.6 × 11.0 × 4.1 M: 2 diesels; 1 prop; . . . hp

Remarks: 952 grt/411 nrt. Former stern-haul trawler purchased 1980 to support the Royal Aircraft Establishment, Farnborough.

◆ 5 1300-series rescue pinnaces Bldrs: Groves & Gutteridge, Robertsons, Poole, and Dorset Yacht Co., Poole (In serv. 1955-65)

1380 1389 1390 1391 1392



Rescue Pinnace 1389

L. & L. Van Ginderen, 7-81

D: 28.3 tons (fl) S: 13 kts Dim: 19.2 × 4.7 × 1.5 M: 2 Rolls-Royce C6 diesels; 2 props; 190 hp Man: 5 tot.

◆ 2 1600-series range safety craft (In serv. 1955-56)

1659 1668

D: 12 tons (fl) **S:** 16 kts **Dim:** $13.1 \times 4.0 \times 1.2$ **M:** 2 Rolls-Royce C6 diesels; 2 props; 190 hp **Man:** 4 tot.

Note: The above two classes of wooden-hulled craft are to be replaced by 1986 by a new series of 8.2-m glass-reinforced plastic workboats built by Cheverton, Cowes. Five 7.3-m Cheverton-built tenders were delivered in 1981.

DEPARTMENT OF AGRICULTURE AND FISHERIES FOR SCOTLAND

AVIATION: In late 1984, a Cessna Titan with Racal ASR 360 radar and aerial cameras was purchased for surveillance, to replace a Turbine Islander chartered in 1982.

FISHERIES PROTECTION SHIPS

• 2 Sulisker class

Bldr L In serv.
SULISKER Ferguson Brothers, Port Glasgow 8-80 1980
VIGILANT Ferguson Ailsa, Port Glasgow 26-3-82 9-82



Sulisker

L. & L. Van Ginderen, 2-81

D: 1,250 tons S: 18 kts Dim: 71.33 (64.00 pp) × 11.60 × 4.66
 Electron Equipt: Radar: 1/Sperry Mk 3012X-59, 1/Sperry Mk 3012S-312
 M: 2 Ruston 12RKCM diesels; 2 CP props; 5,640 hp Electric: 638 kw
 Fuel: 198 tons Range: 7,000/14 Man: 8 officers, 17 men

Remarks: Equipped with 450-hp bow-thruster, Denny-Brown fin stabilizers. 1,177 grt/337 dwt. Equipped for rescue, firefighting, and oil-spill cleanup. Elaborate navigational equipment, particularly in Vigilant.

♦ 2 Jura class Bldr: Hall Russell & Co., Aberdeen

Jura (In serv. 1973) Westra (In serv. 1975)



Jura

L. & L. Van Ginderen, 10-81

D: 778 tons (1,285 fl) S: 17 kts Dim: 59.6 × 10.7 × 4.4 M: 2 British Polar SP112VS-F diesels; 1 prop; 4,200 hp Man: 28 tot.

Remarks: Design (with different engines) employed for Royal Navy's "Isles"-class offshore patrol vessels. *Jura*, chartered by Royal Navy 1973-77, had 1/40-mm AA.

• 2 fisheries patrol boats

Bldr: Cheverton, Cowes (In serv. 31-1-83)

MORVEN MOIDART



Moidart, home-ported at Leith

L. & L. Van Ginderen, 1-84

D: 37 tons (44 fl) S: 24 kts Dim: 19.8 (17.9 pp) × 5.77 × 1.63 M: 3 G.M. 8V92 TI diesels; 3 props; 1,530 bhp Electric: 75 kw Endurance: 7 days Man: 2 officers, 3 men

Remarks: Glass-reinforced plastic construction. Use Murray, Cormack "North Cape 65" hulls, built at Cheverton, Newport, and fitted out at Cowes. Carry Avon Sea-Raider semi-rigid inflatable inspection dinghy.

♦ 1 fisheries patrol boat

Bldr: Osbourne, Littlehampton (In serv. 4-84)

OSPREY

D: 6.25 tons S: 28 kts Dim: 10.06 × 3.05 × 1.12

M: 2 Rolls-Royce Sabre 212 diesels; 2 props; 424 hp Range: 200/. . . Man: 3 tot.

Remarks: Combines rigid hull with inflatable flotation/fender collar, which increases dimensions to 11.20×3.73 when inflated.

◆ 2 13-m patrol craft

Bldr: Cheverton, Cowes (In serv. 1981)

N. N.

◆ 1 7.9-m patrol craft

Bldr: Horne Bros. (In serv. 1981)

SKII

Note: The Scottish Department of Agriculture and Fisheries also operates the research trawlers *Brenda* (460 grt, 1951), *Norma* (600 grt, 1959), *Scotia*, and *Clupea*.



Scotia

L. & L. Van Ginderen, 5-82

H.M. CUSTOMS AND EXCISE MARINE DIVISION

PATROL BOATS AND CRAFT

• 2 33-m-class patrol boats

Bldr: Brooke Marine, Lowestoft (In serv. 1979)

SEARCHER SEEKER



Seeker

L. & L. Van Ginderen, 7-84

D: 160 tons (fl) S: 21 kts Dim: 36.6 (33.8 pp) × 7.0 × 2.0 Electron Equipt: Radar: 1/978

M: 2 Paxman 16YJCM diesels; 2 props; 4,000 hp Electric: 110 kw Fuel: 31 tons Range: 2,200/12 Man: . . .

Remarks: Generally similar to RAF's Seal class and Royal Navy's Kingfisher class, but have more extensive superstructures.

♦ 6 Tracker Mk II patrol craft Bldr: Fairey Marine, Hamble

ACTIVE ALERT CHALLENGE CHAMPION SAFEGUARD SWIFT

Remarks: Data as for units of this class in the Royal Navy (Attacker class). Alert is a Tracker Mk I with pilothouse farther forward.

♦ 3 service launches Bldr: Cheverton, Cowes (In serv. 8-84)

ANTELOPE AVOCET BITTERN

D: 3.75 tons (fl) S: 15 kts Dim: 8.23 × 2.74 × 0.81

M: 2 Perkins 4.236 diesels; 2 props; 140 hp Range: 100/13 Man: 2 tot.

GREAT BRITAIN (continued) PATROL BOATS AND CRAFT (continued)



Active

L. & L. Van Ginderen, 7-85

GREECE

Hellenic Republic

Personnel (1984): 19,500 men, including 2,500 officers

Merchant Marine (1984): 2,904 ships — 35,058,593 grt (tankers: 413 ships — 13,333,022 grt)

Naval Aviation: Greek naval aviation began in April 1975, when four Alouette-III ASW helicopters fitted with AS-12 anti-ship, wire-guided missiles went into service. Subsequently, 16 Agusta-Bell AB-212 helicopters were ordered from Italy in 1977; these are based at Eleusis, with the first two having been delivered 19-7-79. The Air Force has 14 HU-16B Grumman Albatross amphibian planes remaining for maritime reconnaissance; these carry mixed Navy/Air Force crews and are being modernized by Grumman with MEC Super Searcher radars, IFF gear, Marconi LAPADS sonobuoy signal processors, and new radars.



Greek Navy AB-212 helicopter

Officia

Warships In Service Or Under Construction As Of 1 January 1986

| | L | Tons | Main armament |
|--|---------|-------|---|
| 10 submarines | | | |
| 8 Type 209 | 1970-79 | 1,100 | 8/533-mm TT |
| 1 Guppy III | 1945 | 1,660 | 10/533-mm TT |
| 1 Guppy II | 1944 | 1,500 | 10/533-mm TT |
| ♦ 14 destroyers | | | |
| 7 Gearing | 1944-45 | 2,425 | 4-6/127-mm DP, 1/76-mm DP (in 4), ASROC (in 4), 6/ASW TT |
| 1 ALLEN M. SUMNER | R 1944 | 2,200 | 6/127-mm DP, 6/ASW TT |
| 6 FLETCHER | 1942-43 | 2,050 | 4-5/127-mm DP, 6/76.2-mm DP or 10 40-mm AA, ASW weapons |
| ♦ 7 (+4) frigates | | | |
| 0 (+4) | | | |
| 2 Kortenaer | 1979 | 3,000 | Aspide, 2/76-mm DP, 1 helo |
| 1 Rhein | 1960 | 2,370 | 2/100-mm DP, 4/40-mm AA, mines |
| 4 Cannon | 1942-43 | 1,300 | 3/76.2-mm DP, ASW weapons |
| A 00 / 1 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | | | |

- ♦ 26 (+. . .) guided-missile patrol boats and torpedo boats
- 7 patrol craft
- 18 minesweepers
- 2 minelayers
- 3 amphibious-warfare ships

SUBMARINES

| • 8 German Type 209 | | Bldr: Howaldtswerke, Kie | | |
|---------------------|-----------|--------------------------|----------|--|
| | Laid down | L | In serv. | |
| S 110 GLAVKOS | 1-9-68 | 15-9-70 | 5-11-71 | |
| S 111 NEREUS | 15-1-69 | 7-6-71 | 10-2-72 | |
| S 112 TRITON | 1-6-69 | 19-10-71 | 23-11-72 | |
| S 113 Proteus | 1-10-69 | 1-2-72 | 23-11-72 | |
| S 116 Poseidon | 15-4-76 | 21-3-78 | 22-3-79 | |
| S 117 Amprititi | 16-9-78 | 14-6-78 | 14-8-79 | |
| S 118 OKEANOS | 1-10-76 | 16-11-78 | 15-11-79 | |
| S 119 Pontos | 15-1-77 | 22-3-79 | 29-4-80 | |
| | | | | |



Glavkos (S 110) - original version

1977



Poseidon (S 116) - second group, with higher bow

198

D: 980/1,105/1,230 S: 22 kts (max. sub. for 15 min.), 12 kts, snorkel

Dim: 55.0 (116-118: 56.1) × 6.6 × 5.9

A: 8/533-mm TT fwd (+6 reserve torpedoes) Electron Equipt: Radar: Thomson-CSF Calypso

Sonar: Atlas AN 526 passive, CSU AN 406 A9 active, DUUX-2 M: Diesel-electric propulsion; 4 MTU 12V493 TY60 diesels, each linked to an

AEG generator of 420 kw; 1 Siemens motor; 1 prop; 5,000 hp Range: 25/30; 230/8; 400/4 submerged Man: 5 officers, 26 men

Remarks: Diving depth 250 m. The second group of four are 56.1 m overall, 1,185 tons surfaced/1,285 tons submerged, have a higher bow, and H.S.A. SINBADS weapons control with Mk 8 torpedo f.c.s.

• 1 ex-U.S. GUPPY III class

Bldr: Portsmouth Naval SY, New Hampshire

S 115 Katsonis (ex-Remora, SS 487)

Laid down L In serv. 5-3-45 12-7-45 3-1-46



Katsonis (S 115)

D. Dervissis, 9-79

D: 1,660/1,975/2,540 tons S: 17.2/14.5 kts Dim: 99.52 × 8.23 × 5.18

A: 10/533-mm TT (6 fwd, 4 aft; 24 torpedoes)

Electron Equipt: Radar: 1/SS-2A

Sonar: BQG-4 (PUFFS), BQR-2B

EW: WLR-1

SUBMARINES (continued)

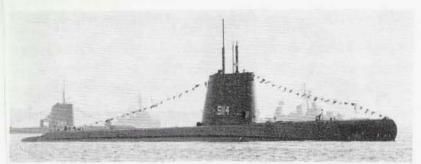
M: 4 Fairbanks-Morse 38D81/2 10-cyl. diesels (1,600 hp each), electric drive; 2 props; 6,400/5,480 hp

Range: 10,000-12,000/10; 95/5 submerged Man: 85 tot.

Remarks: Purchased 29-10-73. GUPPY III conversion completed 1962 at Pearl Harbor

• 1 ex-U.S. GUPPY IIA class Bldr: Manitowoc SB, Wisconsin

Laid down T. In serv. 12-12-43 S 114 Papanikolis (ex-Hardhead, SS 365) 7-7-43 18-4-44



Papanikolis (S 114)

D. Dervissis, 9-79

D: 1,517/1,870/2,440 tons **S:** 18/13.5 kts **Dim:** $93.6 \times 8.2 \times 5.2$

A: 10/533-mm TT (6 fwd, 4 aft, 24 torpedoes)

Electron Equipt: Radar: 1/SS-2A - Sonar: BQR-2R - EW: WLR-1 M: 3 G.M. 16-278A diesels (1,600 hp each), 2 electric motors; 2 props;

3,430/5,480 hp

Remarks: Purchased 26-7-72. The fourth diesel generator was removed to permit enlargement of the sonar compartment during GUPPY II conversion completed 1953. Two 126-cell batteries. Triana (S 86), ex-Scabbardfish (SS 397), is now used for pierside training.

DESTROYERS

• 6 ex-U.S. Gearing FRAM I class

| | Bldr | Laid down | L | In serv. |
|---|--------------------|-----------|---------|----------|
| D 212 Kanaris (ex-Stickell, DD 888) | Consolidated Steel | 5-1-45 | 16-6-45 | 26-9-45 |
| D 213 KONTOURIOTIS (ex-Rupertus, DD 851) | Bethlehem, Quincy | 2-5-45 | 21-9-45 | 8-3-46 |
| D 214 Sachtouris (ex-Arnold J. Isbell, DD 869) | Bethlehem, Quincy | 14-3-45 | 6-8-45 | 5-1-46 |
| D 215 Toumbazis (ex-Gurke, DD 783) | Todd SY, Seattle | 1-7-44 | 15-4-45 | 5-12-45 |
| D 216 APOSTOLIS (ex-Charles P. Cecil, DD 835) | Bath Iron Wks. | 2-12-44 | 22-2-45 | 29-6-45 |
| D 217 Kriezis (ex-Myles C. Fox, DD 829) | Bath Iron Wks. | 14-8-44 | 13-1-45 | 20-3-45 |



Toumbazis (D 215)

Pradignac & Leo, 1984



Sachtouris (D 214)

G. Gyssels, 1985



Sachtouris (D 214)

L. & L. Van Ginderen, 10-84

D: 2,425 tons (3,500 fl) S: 30 kts

Dim: 119.03 × 12.52 × 4.45 (6.40 over sonar)

A: 4/127-mm, 38-cal. (II × 2) - 1/76-mm OTO Melara DP - 1/40-mm A/4 2/12.7-mm mg - 1/ASROC system - 6/324-mm Mk 32 ASW TT (III × 2)-1/d.c. rack

Electron Equipt: Radar: 1/navigational, 1/SPS-10, 1/SPS-40 (SPS-29 on 212, 215, 216), 1/Mk 25, 1/Orion RTN-20X

Sonar: SQS-23D - EW: WLR-1 intercept, ULQ-6 active

M: GT; 2 props; 60,000 hp Electric: 1,200 kw

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm², 454°C superheat Fuel: 650 tons

Range: 2,400/25; 4,800/15 Man: 14 officers, 260 men

Remarks: D 212 transferred 1-7-72; D 213 on 10-7-73 (purchased 11-7-78); D 214 on 4-12-73 (purchased 11-7-78); D 215 purchased 17-3-77; D 216 purchased 2-8-80, originally for cannibalization; and D 217 purchased 8-7-81. All have been given an Elsag NA-21 fire-control system aft, 1/76-mm OTO Melara Compact on the helicopter deck, and a 40-mm AA before the bridge; equipment for D 216 and D 217 ordered 4-85. In D 215, which was equipped as Fleet Flagship 1980-81, two of the boilers are Foster-Wheeler. The 1980-81 purchase ships had LN-66 navigational radars. Also purchased were Corry (DD 817) and Dyess (DD 880), on 8-7-81; they are being cannibalized for spares.

◆ 1 ex-U.S. Gearing DDR FRAM II class

Bldr Laid down In serv. Bath Iron, Wks. D 210 THEMISTOCLES 8-5-44 17-9-44 11-12-44 (ex-Frank Knox, DD 742)



Themistocles (D 210)

L. & L. Van Ginderen, 1980

D: 2,425 tons (3,500 fl) S: 30 kts

Dim: 119.03 × 12.52 × 4.45 (6.40 over sonar)

A: 6/127-mm DP (II × 3) — 4/30-mm AA Emerlec (II × 2) — 6/324-mm Mk 32 ASW TT (III × 2) — 2 Hedgehog — 1 Alouette-III ASW helicopter

Electron Equipt: Radar: 1/navigational, 1/SPS-10, 1/SPS-29, 1/Mk 25 Sonar: SQS-23, SQA-10 VDS-EW: WLR-1

M: 2 sets GT; 2 props; 60,000 hp Electric: 1,200 kw

Boilers: 2 Babcock & Wilcox; 43.3 kg/cm², 454°C superheat Fuel: 650 tons Range: 2,400/25; 4,800/15 Man: 16 officers, 253 men

Remarks: Purchased 30-1-71, having been extensively rebuilt after a grounding in 1966. Radar picket features deleted and helicopter hangar added in Greece by 1978 in place of the after 01 level deckhouse. 30-mm AA substituted for 20-mm single mounts

♦ 1 ex-U.S. Allen M. Sumner class Jersey

D 211 MIAOULIS (ex-Ingraham, DD 694)

Bldr: Federal SB & DD, Kearny, New

Laid down In serv. 4-4-43 16-1-44 10-3-44

DESTROYERS (continued)



Miaoulis (D 211)

Official

D: 2,200 tons (3,320 fl) S: 30 kts

Dim: 114.76 × 12.49 × 4.39 (5.79 over sonar)

A: 6/127-mm, 38-cal. DP (II × 3) - 2/40-mm AA (I × 2) - 6/20-mm AA $(I \times 6) - 2$ Hedgehogs -6/324-mm Mk 32 ASW TT $(III \times 2) - 1/A$ louette-III ASW helicopter

Electron Equipt: Radar: 1/navigational, 1/SPS-10, 1/SPS-40, 1/Mk 25 Sonar: SQS-29, SQA-10 VDS-EW: WLR-1

M: 2 sets GT; 2 props; 60,000 hp

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm2, 454°C Fuel: 495 tons

Range: 2,400/25; 4,800/15 Man: 14 officers, 260 men

Remarks: Transferred 16-7-71. Mk 37 gunfire-control system for 127-mm mounts.

6 ex-U.S. and West German Fletcher class

| | Bldr | Laid down | L | In serv. |
|--|-----------------|-----------|----------|----------|
| D 06 Aspis (ex-Conner, DD 582) | Boston NSY | 16-4-42 | 18-9-42 | 8-6-43 |
| D 16 VELOS (ex-Charette, DD 581) | Boston NSY | 20-2-42 | 3-6-42 | 18-5-43 |
| D 42 KIMON (ex-German Z-2, ex-Ringgold, DD 500) | Federal SB & DD | 25-6-42 | 11-11-42 | 24-12-42 |
| D 58 Lonchi (ex-Hall, DD 583) | Boston NSY | 16-4-42 | 18-7-42 | 6-7-43 |
| D 65 Nearchos (ex-German Z 3, ex-Wadsworth, DD 516) | Bath Iron Wks. | 18-8-42 | 10-1-43 | 16-3-43 |
| D 85 SPHENDONI (ex-Aulick, DD 569) | Consolidated SB | 14-5-41 | 2-3-42 | 27-10-42 |



Velos (D 16)

G. Arra



Kimon (D 42) — en route Greece as Z 2 (D 171)

Skyfotos, 8-81

D: 2,050 tons (2,850 fl) S: 32/30 kts Dim: $114.85 \times 12.03 \times 5.5$ A: 4/127-mm, 38 cal. (I × 4) -6/76.2-mm DP, 50-cal. (II × 3) -5/533-mm TT (V × 1, see remarks) −6/324-mm Mk 32 ASW TT (II × 2) −2 Hedgehogs 1/d.c. rack (not in D 42, D 65) - D 42, D 65: mine rails

Electron Equipt: Radar: 1/navigational, 1/SPS-10, 1/SPS-6, 1/Mk 25, 2/Mk 34, 1/Mk 35

Sonar: SQS-4 or 29 series - EW: SLR-1 or WLR-1

M: 2 sets GT; 2 props; 60,000 hp Electric: 580 kw

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm2, 454° Fuel: 650 tons

Range: 1,260/30; 4,400/15 Man: 350 tct.

Remarks: D 06 loaned 15-9-59, D 16 on 15-6-69, D 58 on 9-2-60, and D 85 on 21-8-59; all purchased 25-4-77, along with Thyella (D 28, ex-Bradford, DD 545), stricken 2-81, and Navarinon (D 63, ex-Brown, DD 546), stricken 1981. D 65 purchased and transferred from West Germany on 30-10-80, and D 42 was purchased 9-81, originally for cannibalization. Have Mk 37 GFCS for 127-mm, Mk 56 GFCS for aft 76.2-mm, and 2 Mk 63 GFCS for amidships 76.2-mm guns. The ex-German ships had 2/533-mm ASW TT vice Mk 32 ASW TT and were equipped with mine rails; they had Kelvin-Hughes 14/9 navigational radars. Acquired for cannibalization and scrapping were ex-German Z 1(ex-Anthony, DD 515) in 1979, Z 4 (ex-Claxton, DD 571) on 26-2-80, and Z 5 (ex-Dyson, DD 572) in 9-81.

FRIGATES

Note: Four frigates are to be built in Greece to replace the obsolete U.S. Cannon-class ships, according to official statements made in 1985. Todd Shipyards, U.S., has offered a 1,950-ton, 105-m design with 127-mm or 76-mm gun.

2 Dutch Kortenaer class

Bldr: de Schelde, Vlissingen

Laid down In serv. F 450 Elli (ex-Pieter Floresz) 10-10-81 2-7-77 15-12-79 F 451 Limnos (ex-Witte de With) 13-6-78 18-9-82 27-10-79



Elli (F 450)

L. & L. Van Ginderen, 10-81



Limnos (F 451)

L. & L. Van Ginderen, 9-82

D: 3,000 tons (3,786 fl) S: 30 kts

Dim: 130.2 (121.8 pp) × 14.4 × 4.4 (6.0 props)

A: 8/Harpoon SSM (IV × 2)-1 Mk 29 SAM syst. (VIII × 1; 24 Aspide missiles) - 2/76-mm OTO Melara DP-4/324-mm Mk 32 ASW TT (II × 2) 1/AB 212 ASW helicopter

Electron Equipt: Radar: 1/ZW-06, 1/LW-08, 1/WM-25, 1/STIR-Sonar: SQS-505

EW: Elektronica Sphinx intercept syst., 2 Knebworth/Corvus chaff RL (VIII × 2)

M: COGOG: 2 Rolls-Royce Tyne RM-1C cruise gas turbines, 4,900 hp each, 2 Rolls-Royce Olympus TM-3B gas turbines, 25,800 hp each; 2 LIPS CP props; 51,600 hp max.

Electric: 3,000 kw (4 SEMT-Pielstick PA4 diesel generator sets) Range: 4,700/16 (on one Tyne turbine) Man: 17 officers, 182 men

Remarks: Elli was officially turned over to Greece on 26-6-81 at the commencement of sea trials, having been ordered 7-81, along with the second unit. Both were taken from production for the Dutch Navy, in order to speed delivery. Plans to build a third ship in Greece were canceled. Have Denny-Brown fin stabilizers. Elli had been equipped with racks to hold 8 Harpoon SSM containers (IV × 2), but these were removed prior to transfer in 1983; 32 Harpoon were ordered from the U.S. for these ships and others. One U.S. Mk 15 CIWS 20-mm gatling AA is being added for close-in defense. Hangar lengthened 2.2m to accept Italian-built helicopter vice Lynx used by Dutch Navy. Have SEWACO II combat data system. See also class notes in Netherlands section.

FRIGATES (continued)

 1 German Rhein-class former tender Bldr: Elsflether Werft, West Germany

Laid down In serv. D 03 AEGEON (ex-Weser, A 62) 11-6-60 14-7-62 1-8-59

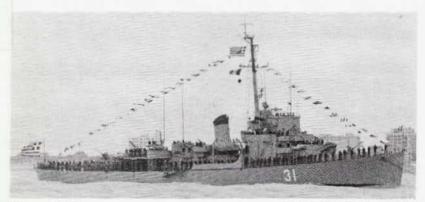
D: 2,370 tons (2,740 fl) S: 20.5 kts Dim: 98.18 (92.8 pp) × 11.8 × 3.9 A: 2/100-mm DP (I × 2) - 4/40-mm AA (I × 4) - 70 mines

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/SGR-105, 1/SGR-103, 2/M 45 M: 6 Maybach 16-cyl. diesels; 2 CP props; 12,600 hp Electric: 2,250 kVA Range: 2,500/16 Man: 110 tot.

REMARKS: Transferred 6-7-76. A small combatant tender used by Greece as a frigate. Still can act as a tender. Two Mk 2 GFCS for 100-mm DP.

♦ 4 ex-U.S. Cannon class

| | Bldr | Laid down | L | In serv. |
|---------------------------------------|---|-----------|----------|----------|
| D 01 Acros | Tampa Shipbldg, Tampa, Florida | 1-4-43 | 11-5-44 | 12-7-44 |
| (ex-Ebert, DE 768) D 31 HIERAX | Tampa Shipbldg, | 9-3-43 | 13-2-44 | 1-5-44 |
| (ex-Slater, DE 766) D 54 Leon | Tampa, Florida Federal, Port Newark, | 23-9-43 | 12-12-43 | 24-1-44 |
| (ex-Garfield Thomas, DE 193) | New Jersey | | | |
| D 67 PANTHIR (ex-Eldridge, DE 173) | Federal, Port Newark, New Jersey | 22-2-43 | 25-6-43 | 27-8-43 |



Hierax (D 31)

L. & L. Van Ginderen, 7-80

D: 1,300 tons (1,750 ft) **S:** 19 kts **Dim:** 93.0 (91.5 pp) \times 11.17 \times 3.25 **A:** 3/76.2-mm DP - 6/40-mm AA (II \times 3) - 14/20-mm AA (II \times 7) - 6/324-mm Mk 32 ASW TT (III × 2) — 1 Hedgehog — 8/d.c. projectors — 2/d.c. racks Electron Equipt: Radar: 1/navigational, 1/Mk 26 f.c.

Sonar: QCU-2 M: 4 G.M. 16-278A diesels, electric drive; 2 props; 6,000 hp Electric: 680 kw Fuel: 300 tons Range: 5,500/19; 11,500/11

Man: Peacetime: 150 men; wartime: 185 men

Remarks: Transferred in 1951. Have Mk 52 GFCS for 76.2-mm guns (plus separate rangefinder), 3 Mk 51 Mod. 2 GFCS for 40-mm AA. Obsolete SA radar removed by 1980. Thoroughly obsolete; to be replaced by new construction.

GUIDED-MISSILE PATROL BOATS

Note: Three (with nine more planned) 45-m. patrol boats were reportedly ordered 1984 from Olympic marine, Lavrio. No further data available, but these apparently supercede the planned order for additional units of the Combattante III N class.

♦ 10 Combattante III N class Bldr: (A) Hellenic SY, Skaramanga; (B) Constr. Méc. de Normandie, Cherbourg

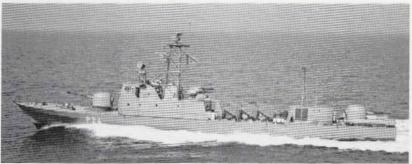
| | Bldr | L | In serv. |
|-------------------------------|------|----------|----------|
| P 20 Antipliarchos Lascos | В | 6-7-76 | 2-4-77 |
| P 21 Antipliarchos Blessas | В | 10-11-76 | 19-7-77 |
| P 22 Antipliarchos Troupakis | В | 6-1-77 | 8-11-77 |
| P 23 Antipliarchos Mykonios | В | 5-5-77 | 10-2-78 |
| P 24 Simaiforos Kavalouthis | A | 10-11-79 | 14-7-80 |
| P 25 Antipliarchos Kostakos | A | 1-3-80 | 9-9-80 |
| P 26 Ipopliarchos Deyiannis | A | 14-7-80 | 12-80 |
| P 27 Simaiforos Xenos | A | 8-9-80 | 31-3-81 |
| P 28 Simaiforos Simitzopoulos | A | 12-10-80 | 6-82 |
| P 29 Simaiforos Starakis | A | 1981 | 12-10-81 |

D: 385 tons (447 fl) S: 36.5 kts (2nd group: 32.6)

Dim: 56.65 (53.00 pp) × 8.00 × 2.70 (props)
A: First four: 4/MM 38 Exocet SSM (II × 2) — 2/76-mm OTO Melara DP (I × 2) - 4/30-mm Emerlec AA (II × 2) - 2/533-mm TT (2 SST-4 wireguided torpedoes)

Later six: 6 Penguin SSM (I × 6) -2/76-mm OTO Melara Compact DP (I × 2) - 4/30-mm Emerlec AA (II × 2) - 2/533-mm TT (2 SST-4 torpedoes)

Electron Equipt: Radar: 1/Decca 1226, 1/Thomson-CSF Triton, 1/Thomson-CSF Castor



Simaiforos Kavalouthis (P 24) - Second Group

Hellenic SY, 1981



Antipliarchos Lascos (P 20) - First Group

CMN, 1976

M: First four: 4 MTU 20V538 TB92 diesels; 4 props; 20,800 hp (18,000 sust.) Later six: 4 MTU 20V538 TB91 diesels; 4 props; 15,000 hp (13,400 sust.) Electric: 450 kw Range: 800/32.5; 2,000/15 Man: 7 officers, 36 men

Remarks: First four ordered 22-5-75. Second group, built in Greece, and with less expensive weapon, sensor, and propulsion systems, ordered 22-12-76. Each 76-mm gun has 350 rounds, with 80 in ready service. The Emerlec 30-mm mounts are furnished with 3,200 rounds and fire at 700 rounds/barrel/minute. Ships have excellent habitability; accommodations and operations spaces are air-conditioned. There are 3 Jeumont-Schneider 150-kw generator sets (440v., 3-ph., 60-Hz.). First group has Thomson-CSF Vega weapon control system, later ships Vega II. All have 2 CSEE Panda directors for the 30-mm AA.

 4 Combattante II class Bldr: Constr. Méc. de Normandie (CMN), Cherbourg

| | L | In serv. |
|--|-----------|----------|
| P 14 IPOPLIARCHOS ARLIOTIS (ex-Euniki) | 26-4-71 | 4-72 |
| P 15 IPOPLIARCHOS ANNINOS (ex-Navsithoi) | 8-9-71 | 6-72 |
| P 16 IPOPLIARCHOS KONIDIS (ex-Kimothoi) | 20-12-71. | 7-72 |
| P 17 IPOPLIARCHOS BATSIS (ex-Kalypso) | 26-1-71 | 12-71 |



Ipopliarchos Batsis (P 17) - with old number

L. & L. Van Ginderen, 1980

D: 234 tons (255 fl) S: 36.5 kts Dim: 47.0 (44.0 pp) × 7.1 × 2.5 (fl)

A: 4/MM 38 Exocet SSM (II × 2) — 4/35-mm Oerlikon AA (II × 2) — 2/533-mm wire-guided TT aft

Electron Equipt: Radar: 1/Decca 1226, 1/Thomson-CSF Triton, 1/Thomson-CSF Castor

M: 4 MTU MD 872 diesels; 4 props; 12,000 hp Fuel: 39 tons Range: 850/25; 2,000/15 Man: 4 officers, 36 men

GUIDED-MISSILE PATROL BOATS (continued)

Remarks: Steel hull, light steel alloy superstructure. Ordered 1969. Thomson-CSF Vega weapon control system.

♦ 2 Kelefstis Stamou class Bldr: Chantiers Navales de l'Estérel, Cannes

P 286 Kelefstis Stamou (In serv. 28-7-75) P 287 Diopos Antoniou (In serv. 4-12-75)



Kelefstis Stamou (P 286)

L. & L. Van Ginderen, 8-84

D: 80 tons (115 fl) **S:** 30 kts **Dim:** $32.0 \times 5.8 \times 1.5$

A: 4/SS-12 wire-guided SSM — 1/20-mm AA — 2/12.7-mm mg (I \times 2)

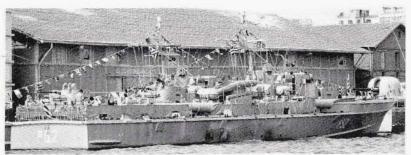
M: 2 MTU 12V331 TC81 diesels; 2 props; 2,700 hp Range: 1,500/15 Electron Equipt: Radar: 1/Decca . . . nav. Man: 17 tot.

Remarks: These wooden-hulled ships were ordered by Cyprus, but acquired by Greece. Pendant numbers were P 28 and P 29 until 1980.

♦ 5 ex-German Type 141 class Bldrs: (A) Lürssen, Vegesack;

TORPEDO BOATS

| | (B) Krögerwerft, Rendsburg | | | | |
|-----------------------------|----------------------------|-----------|---------|----------|--|
| | Bldr | Laid down | L | In serv. | |
| P 50 Esperos (ex-Seeadler) | A | 23-9-57 | 1-2-58 | 29-8-58 | |
| P 53 Kyklon (ex-Grief) | A | 5-2-58 | 28-6-58 | 3-3-59 | |
| P 54 Laiaps (ex-Kondor) | A | 2-1-58 | 17-5-58 | 24-2-59 | |
| P 55 Scorpios (ex-Kormoran) | В | 2-2-59 | 16-7-59 | 9-11-59 | |
| P 56 Typon (ex-Geier) | A | 27-5-58 | 1-10-58 | 3-6-59 | |



Kentauros (P 52) - now stricken

D. Dervissis, 9-80

D: 195 tons (221 fl) **S:** 42.5 kts **Dim:** $42.62 \times 7.10 \times 2.39$

A: 2/40-mm AA (I × 2) -4/533-mm TT (I × 4)

M: 4 Maybach 16-cyl. diesels; 4 props; 14,400 hp Electric: 192 kw

Range: 500/39; 1,000/32

Remarks: Transferred 1976-77. Three others, ex-Albatros, ex-Bussard, and ex-Sperber, were transferred to be cannibalized for spares. Wooden-planked hull skin on metal frame. Kataigis (P 51, ex-P 197, ex-Falke) stricken late 1981. Kentauros (P 52, ex-Habicht) stricken 1985.

PATROL CRAFT

• 3 Dilos class Bldr: Hellenic SY, Skaramanga (In serv. 1978-80)

P 267 Dilos P 268 Lindos P 269 Knossos

D: 75 tons (86 fl) **S**: 27 kts **Dim**: $29.0 \times 6.2 \times 1.1$

A: 2/20-mm AA (I \times 2)

M: 2 MTU 12V331 TC92 diesels; 2 props; 2,700 hp Range: 1,600/25

Man: 15 tot.



Knossos (P 269)

L. & L. Van Ginderen, 7-79

Remarks: Designed by Abeking & Rasmussen, West Germany. Used for air-sea rescue.

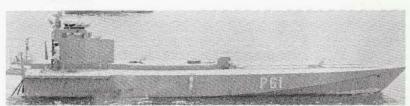
Three each also built for Customs Service and Coast Guard.

♦ 3 Panagopoulos I class Bldr: Hellenic SY, Skaramanga

P 61 E. Panagopoulos I (In serv. 23-6-76)

P 62 E. Panagopoulos II (In serv. 1980)

P 63 E. Panagopoulos III (In serv. 1981)



E. Panagopoulos I (P 61)

D. Dervissis, 7-79

Remarks: No data available. Twin-screw diesel propulsion, armed with light mg. only. Described by builder as "pursuit vessels." Decca navigational radar.

◆ 1 Goulandris I class Bldr: Neozioh SY, Syros

In serv.

P 290 N.I. GOULANDRIS II 6-6-77



N.I. Goulandris II (P 290)

1981

D: 38.5 tons S: 30 kts Dim: 24.0 × 6.2 × 1.1 A: 2/20-mm AA (I × 2) M: 2 diesels; 2 props; 2,700 hp Range: 1,600/. . . Man: 10 tot.

Remarks: N.I. Goulandris I (P 289) blew up and sank 24-6-83.

• 1 ex-U.K. Scimitar-class former target boat

P. . . AQUILON Vosper Thornycroft, 4-12-69 (ex-Scimitar, P 271) Portsmouth

D: 102 tons (fl) S: 40 kts Dim: 30.5 × 8.1 × 1.95 A: . . . Electron Equipt: Radar: 1/Decca . . . nav.

M: CODOG: 2 Rolls-Royce Proteus gas turbines (4,500 hp each) or 2 Foden

diesels (180 hp each); 2 props; 9,000 hp Range: 425/35; 1,500/21.5 Man: 2 officers, 10 men

Remarks: Reported purchased 4-85. Former training craft intended to simulate missile boats, Wooden construction. Of dubious utility.

MINE WARFARE SHIPS

M 241 Kichli (ex-MSC 308) 14-7-64

♦ 9 U.S. Falcon (MSC 294)-class coastal minesweepers Bldr: Peterson Bldrs, Sturgeon Bay, Wisconsin (except M 246: Tacoma Boatbldg, Tacoma, Washington)

| | In serv. | | In serv. |
|---------------------------|----------|--------------------------|----------|
| M 211 ALKYON (ex-MSC 319) | 3-12-68 | M 242 Kissa (ex-MSC 309) | 1-9-64 |
| M 213 Klio (ex-Argo, | 7-8-68 | M 246 Aigli (ex-MSC 299) | 4-1-65 |
| ex-MSC 317) | | M 247 DAFNI (ex-MSC 307) | 23-9-64 |
| M 214 Avra (ex-MSC 318) | 3-10-68 | M 248 AEDON (ex-MSC 310) | 13-10-64 |
| M 240 PLEIAS (ex-MSC 314) | 22-6-67 | | |

D: 300 tons (394 fl) S: 13 kts Dim: 44.32 × 8.29 × 2.55

A: 2/20-mm AA (II × 1) M: 2 Waukesha L-1616 diesels; 2 props; 1,200 hp

Electron Equipt: Radar: 1/. . . nav.—Sonar: UQS-1D Fuel: 40 tons Range: 2,500/10 Man: 4 officers, 27 men

MINE WARFARE SHIPS (continued)



Klio (M 213)

L. & L. Van Ginderen, 5-84

Remarks: Built for Greece under the Military Aid Program; transferred on completion. Sister *Doris* (A 475, ex-M 245, ex-MSC 298) is employed as a hydrographic survey ship. Original Decca 707 radar replaced by 1984.

5 ex-Belgian U.S. Adjutant-class coastal minesweepers
 Bldrs: Consolidated SB, Morris Heights, N.Y. (M 205, M 206: Hodgdon Bros., East
 Boothbay, Maine)

| | In serv. |
|---|----------|
| M 202 ATALANTI (ex-St. Truiden, ex-MSC 169) | 2-54 |
| M 205 ANTIOPI (ex-Herve, ex-MSC 153) | 3-54 |
| M 206 Phedra (ex-Malmedy, ex-MSC 154) | 5-54 |
| M 210 Thalia (ex-Blankenberge, ex-MSC 170) | 5-54 |
| M 254 Niovi (ex-Larcche, ex-MSC 171) | 8-54 |



Antiopi (M 205)

G. Arra, 1973

D: 330 tons (402 fl) S: 13 kts (8 sweeping)

Dim: 43.0 (41.50 pp) × 7.95 × 2.55 A: 2/20-mm AA (II × 1) M: 2 G.M. 8-268A diesels; 2 props; 880/1,000 hp Fuel: 40 tons

Range: 2,500/10 Man: 4 officers, 27 men

Remarks: Transferred to Belgium on completion; re-transferred to Greece 7-9-69.

M 202 was configured as a hydrographic survey ship from the late 1970s to 1982.

♦ 4 ex-U.S. 50-ft-class minesweeping launches

D: 21 tons (fl) S: 8 kts Dim: 15.20 × 4.01 × 1.31 M: 1 Navy DB diesel; 60 hp Range: 150/8 Man: 6 tot.

Remarks: Wooden-hulled former personnel launches loaned in 1972 and purchased during 1981.

• 2 minelayers, former U.S. LSM 1-class landing ships Bldr: Charleston Naval SY

Laid down L In serv. N 04 Aktion (ex-LSM 301) 18-10-44 19-11-44 1-1-45 N 05 Amvrakia (ex-LSM 303) 8-10-44 14-11-44 6-1-45

D: 720 tons (1,100 fl) S: 13 kts Dim: 62.0 × 10.5 × 2.4

A: 8/40-mm AA (II × 4) — 6/20-mm AA (I × 6) — 100 to 300 mines, depending upon type

M: 2 G.M. 16-278A diesels; 2 props; 2,800 hp Range: 3,500/12 Man: 65 tot.



Amvrakia (N 05)

Remarks: Transferred in 1953. Four derricks, two forward and two aft, for handling mines. Two minelaying rails. Four 30-cm searchlights, 1 of 60 cm. Four Mk 51 Mod. 2 optical GFCS for the 40-mm AA. Twin rudders. Three of the same class ships were transferred to Turkey and two to Norway, who passed them on to Turkey in 1961.

AMPHIBIOUS WARFARE SHIPS

Note: Officially announced 1985 that five landing ships are to be built in Greece, probably to replace the U.S. LST 1/511-class ships.

♦ 1 ex-U.S. Cabildo-class dock landing ship Bldr: Boston Naval SY

Laid down L In serv.
L 153 Nafkratoussa (ex-Fort 16-12-44 6-4-45 31-10-45
Mandan, LSD 21)

D: 4,790 tons (9,375 fl) S: 15 kts Dim: 139.5 × 21.9 × 5.49 A: 8/40-mm AA (IV × 2) Electron Equipt: Radar: 1/SPS-5, 1/SPS-6 M: 2 sets GT; 2 props; 7,000 hp Electric: 600 kw Boilers: 62/30.6 kg/cm², 393°C Fuel: 1,758 tons Range: 8,000/15 Man: 254 tot.

Remarks: Modernized under the FRAM program and transferred 1-71. Flagship of the amphibious forces. Helicopter deck. Well deck: 103.0 × 13.3. Two 35-ton cranes. Can carry 18 LCMs, each with an LCVP nested in it. SPS-6 air-search radar recently added.

• 2 ex-U.S. Terrebonne Parish-class LSTs

| | Bldr | Laid down | L | In serv. |
|---------------------------------|---------------|-----------|---------|----------|
| L 104 Oinoussai | Bath Iron Wks | 3-3-52 | 6-12-52 | 19-3-53 |
| (ex-Terrell County, LST 1157) | | | | |
| L 116 Kos | Christy Corp. | | 22-8-53 | 14-9-54 |
| (ex-Whitfield County, LST 1169) | 100 | | | |



Kos (L 116)

L. & L. Van Ginderen, 1982

D: 2,590 tons (6,225 fl) S: 12 kts Dim: 112.35 × 16.7 × 3.7

A: 6/76.2-mm AA (II × 3) -4/20-mm AA (I × 4)

Electron Equipt: Radar: 1/. . . nav., 1/SPS-10, 2/Mk 34

M: 4 G.M. diesels; 2 CP props; 6,000 hp Man: 115 crew, 395 troops

REMARKS: Purchased 17-3-77. Two Mk 63 GFCS.

♦ 5 ex-U.S. LST 1 and LST 511-class tank landing ships

In serv. 27-10-42 L 144 Syros (ex-LST 325) Philadelphia NY 10-8-42 1-2-43 L 154 IKARIA American Bridge, 5-12-44 28-1-45 24-2-45 (ex-Potter County, LST 1086) Ambridge, Pa. L 157 Rodos Newport News 14-7-42 28-10-42 3-12-42 (ex-Bowman County, SB & DD LST 391) L 171 KRITI Bethlehem Steel. 16-3-45 14-4-45 1-5-45 (ex-Page County, LST 1076) Hingham, Mass. L 172 Lesbos Newport News 20-6-42 15-10-42 24-11-42 (ex-Boone County, LST 389) SB & DD

D: 1,653 tons (4,080 fl) S: 11.6 kts Dim: 99.98 × 15.24 × 3.4

A: 8/40-mm AA (II × 2, I × 4) -4/20-mm AA (II × 2)

Electron Equipt: Radar: 1/. . . nav.

M: 2 G.M. 12-567A (L 171: 16-278A) diesels; 1,700 hp

Electric: 300 kw Fuel: 569 tons Range: 15,000/9 Man: 125 tot.

Remarks: L 144 (with reinforced waterline belt for ice operations!) was transferred 29-5-64 after a complete refit and modernization; L 154, L 157, and L 172 transferred 9-8-60; L 171 transferred 3-71 (purchased 11-7-78). All have tripod masts and carry 4 LCVP in Welin davits. Cargo: 2,100 tons

AMPHIBIOUS WARFARE SHIPS (continued)



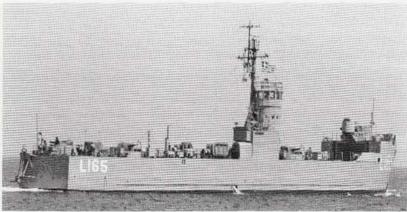
Ikaria (L 154)

L. & L. Van Ginderen, 1982

♦ 5 ex-U.S. LSM 1-class medium landing ships

Bldrs: L 161, 162, 165: Brown Bros. SB, Houston; L 163: Dravo Corp, Wilmington, Del.; L 164: Charleston NSY

| | Laid down | L | In serv. |
|--|-----------|----------|----------|
| L 161 IPOPLIARCHOS GRIGOROPOULOS (ex-LSM 45) | 6-6-44 | 30-6-44 | 31-7-44 |
| L 162 IPOPLIARCHOS TOURNAS (ex-LSM 102) | 23-9-44 | 14-10-44 | 9-11-44 |
| L 163 Ipopliarchos Daniolos (ex-LSM 227) | 17-7-44 | 9-9-44 | 5-10-44 |
| L 164 IPOPLIARCHOS ROUSEN (ex-LSM 399) | 29-12-44 | 18-1-45 | 13-8-45 |
| L 165 Ipopliarchos Krystallidis (ex-LSM 541) | 7-7-45 | 18-8-45 | 7-12-45 |



Ipopliarchos Krystallidis (L 165)

P. Voss, 4-83

D: 1,095 tons (fl) S: 12.5 kts Dim: 62.03 × 10.52 × 2.54

A: 2/40-mm AA (II × 1) -4/20-mm AA (I × 4)

Electron Equipt: Radar: 1/Decca . . . nav.

M: 2 Fairbanks-Morse 38D1/8-10 (L 164: G.M. 16-278A) diesels; 2 props; 2,800 hp Electric: 240 kw Fuel: 161 tons Range: 4,900/12 Man: 60 tot.

Remarks: Transferred 3-11-58 (L 165: 30-10-58).

* 6 ex-U.S. LCU 501-class utility landing craft

Bldrs: L 145, 146, 147: Mare Island NSY, Cal.; L 149; Missouri Valley Bridge & Iron, Leavenworth, Kan.; L 150: Pidgeon-Thomas Iron, Memphis, Tenn.; L 152: Kansas City Steel, Kansas City, Missouri

| | In serv. | | In serv. |
|----------------------------|----------|----------------------------|----------|
| L 145 Kassos (ex-LCU 1382) | 30-11-44 | L 149 Kythnos (ex-LCU 763) | 24-12-43 |
| L 146 Karpathos | 17-11-44 | L 150 SIFNOS (ex-LCU 677) | 11-3-44 |
| (ex-LCU 1379) | | L 152 SKYATOS (ex-LCU 827) | 10-4-44 |
| L 147 Kimonos (ex-LCU 971) | 1-2-44 | | |
| | | | |

D: 143 tons (309 fl) S: 8 kts Dim: 36.3 × 9.96 × 1.14

A: 2/20-mm AA (I × 2) M: 3 G.M. 6-71 diesels; 675 hp Man: 13 tot.

Remarks: Transferred 1959-62.

◆ 2 ex-British LCT(4)-class utility landing craft Bldrs: . . . , U.K. (In serv. 1944-45)

L 185 Kythera (ex-LCT 1198) L 189 Milos (ex-LCT 1300)

D: 280 tons light (640 fl) **S**: 9.5 kts **Dim**: $57.07 \times 11.79 \times 1.30$ (aft)

A: 2/20-mm AA M: 2 Paxman diesels; 2 props; 1,000 hp

Range: 500/9.5; 3,100/7 Man: 12 tot.

Remarks: Transferred 1946; survivors of a group of 12. Cargo: 350 tons.

♦ 11 ex-U.S. LCM(6)-class landing craft

D: 24 tons light (56 fl)
 S: 10 kts
 Dim: 17.07 × 4.37 × 1.17 (aft)
 M: 2 Gray Marine 64HN9 diesels; 2 props; 330 hp
 Range: 130/10

Remarks: Cargo: 30 tons. Transferred: 5 in 3-56, remainder in 3-58.

♦ 7 LCVP-type landing craft

Bldr: Viking Marine, Hellas, Piraeus (In serv.

D: 13 tons (fl) S: 8 kts Dim: 10.90 × 3.21 × 1.04 (aft)

M: 1 G.M 6-71 diesel; 200 hp

♦ 34 ex-U.S. LCVP-type landing craft

D: 13 tons (fl) S: 9 kts Dim: 10.90 × 3.21 × 1.04 (aft) M: 1 Gray Marine 64HN9 diesel; 225 hp Range: 110/9

Remarks: Carried by LSTs and the LSD. Cargo 36 troops or 3.5 tons cargo. Transferred: 10 in 11-56, 4 in 7-58, 10 in 1-62, 4 in 6-64, 3 in 10-69, and remainder in 3-71,

HYDROGRAPHIC SHIPS

 1 new-construction oceanographic survey ship Bldr: Anastassiadis Tsortanidis, Perama

L In serv. A. . . Pytheas 19-9-83 12-83

D: 670 tons (840 fl) **S:** 15 kts **Dim:** 50.00 (44.91 pp) \times 9.60 \times 4.22

M: 2 G.M. diesels; 2 props; 1,800 hp Man: 40 tot.

Remarks: Programmed 1979, ordered 5-82.

• 1 Naftilos class

Bldr L In serv.
A 478 Naptilos Anastassiadis Tsortanidis, Perama 19-11-75 3-4-76



Naftilos (A 478)

Greek Navy

D: 1,380 tons (1,480 fl)
 S: 15 kts
 Dim: 63.1 (56.5 pp) × 11.6 × 4.0
 M: 2 Burmeister & Wain SS28LH diesels; 2 props; 2,640 hp
 Man: 57 tot.

Remarks: In service 3-4-76, Sisters St. Lykoudis (A 481) and I. Theophilopoulos Karavoyiannos (A 485) are lighthouse tenders. Helicopter landing platform.

• 1 modified U.S. Falcon-class coastal minesweeper

Bldr In serv. A 475 Doris (ex-M 245, ex-MSC 298) Tacoma Boatbldg. 9-11-64

Remarks: Transferred on completion; converted late 1970s. Man: 3 officers, 32 men; other details as for minesweeper version.

♦ 2 ex-German KW1-class coastal survey ships

A 476 Archikelefstis Maliopoulos (ex-Ger. KW 8, ex-H 8, ex-W 17)

A 477 Archikelefstis Stasis (ex-Ger. KW 2, ex-H 2, ex-W 2, ex-Inger, ex-Concordia, ex-K 613, ex-M 3253)

D: 112 tons (fl) S: 9 kts Dim: 22.30 (20.57 pp) × 6.40 × 2.75

M: 1 Demag 5-cyl. diesel; 150 hp Electric: 10 kVA

Range: 1,200/7 Man: 16 tot.

Remarks: Wooden construction, fishing-cutter hulls. Construction yard unknown; entered West German service 10-4-52. Transferred 30-8-75 as patrol boats. A 476 converted to replace sister *Anemos* (A 469), stricken 1977, while A 477 was converted in 1981 to replace the minesweeper *Atalanti* (M 202), returned to mine countermeasures duties.

AUXILIARY SHIPS

♦ 1 training ship Bldr: Anastassiadis Tsortanidis, Perama

Laid down L In serv.
A 74 Aris 10-76 4-10-78 1-81



Aris (A 74)

L. & L. Van Ginderen, 8-83

AUXILIARY SHIPS (continued)

D: 3,100 tons (4,500 fl) S: 20 kts Dim: 100.0 (95.0 pp) × 11.0 × 4.5 A: 2/76.2-mm U.S. Mk 26 DP (I × 2) -2/40-mm AA (I × 2) -4/20-mm AA (I × 4) - 1 Alouette-III helicopter

M: 2 MAK diesels; 2 props; 10,000 hp Man: 130 crew + 370 cadets

Remarks: Largest naval ship built in Greece. Resembles a small passenger ship and can serve as a hospital ship or transport in wartime. Completion delayed by payment dispute. Two lead-computing GFCS for the 40-mm AA.

1 yacht/training ship, ex-Canadian "River"-class frigate

Laid down Bldr In serv. A. . . Argo (ex-Christina, Can. Vickers, Montreal 23-12-42 12-6-43 14-11-44 ex-Montreal, ex-Stormont)

D: 1,526 grt S: 20 kts Dim: 99.15 (86.59 pp) × 11.13 × 5.33 A: . M: 2 sets 4-cyl. triple-expansion steam; 2 props; 5,500 hp Electric: 400 kw Boilers: 2 water-tube, 17.6 kg/cm² Range: 7,400/15; 12,000/10 Man: . . .

Remarks: Donated 12-7-78. Former yacht of shipowner Aristotle Onassis, converted from a frigate 1951-54 by Howaldtswerke, Kiel. Used as presidential yacht.

Bldr: Anastassiadis Tsortanidis, Perama

A 419 Pandora (In serv. 26-10-73) A 420 Pandrosos (In serv. 1-12-73)



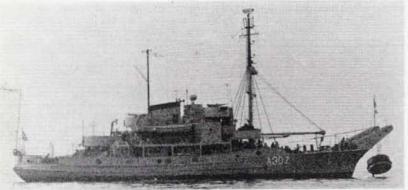
Pandora (A 419)

L. & L. Van Ginderen, 1984

D: 350 tons (390 fl) S: 11 kts Dim: 46.8 × 8.3 × 1.9 M: 2 diesels; 2 props; . . . hp

REMARKS: Can carry up to 500 personnel.

Bldr: Krögerwerft, Rendsburg 1 netlayer and mooring buoy tender A 307 THETIS (ex-U.S. AN 103) (In serv. 4-60)



Thetis (A 307)

D. Dervissis, 7-79

D: 560 tons (975 fl) S: 12.8 kts Dim: 48.5 (51.7 over horns) × 10.6 × 3.7 A: 1/40-mm AA - 3/20-mm AA (I × 3) Electron Equipt: Radar: 1/Decca 707 M: 1 M.A.N. G7V 40/60 diesel; 1 prop; 1,470 hp Fuel: 134 tons Range: 6,500/10.2 Man: 5 officers, 45 men

Remarks: Launched 1959, Transferred 4-60, Has 152 tons water ballast. The 40-mm AA is normally not aboard; can carry 1,600 rds 40-mm, 25,200 rds 20-mm ammuni-

Bldr: Cargill SY, Savage, Minn. 2 ex-U.S. Patapsco-class oilers

Laid down In serv. 6-12-44 11-6-45 A 377 Arethousa (ex-Natchaug, AOG 54) 15-8-44 A 414 ARIADNI (ex-Tombigbee, AOG 11) 23-10-42 18-11-43 13-7-44

D: 1,850 tons (4,335 fl) S: 13 kts Dim: 94.72 (89.0 pp) × 14.78 × 4.78 A: A 377:4/76.2-mm AA (I × 4) - A 414: 2/76.2-mm AA (I × 2) Electron Equipt: Radar: 1/navigational, 1/SPS-5, 1/Mk 26 M: 2 G.M. 16-278A diesels; 2 props; 3,300 hp Electric: 460 kw Fuel: 295 tons Man: 46 tot.



Arethousa (A 377) - note 76.2-mm gun off centerline to stbd.

Official

Remarks: Former gasoline tankers. Cargo: 2,040 tons. One Mk 52 radar GFCS and one Mk 51 GFCS.

Bldr: Kynossoura SY, Piraeus 2 coastal tankers

A 416 Ouranos (In serv. 29-1-77) A 417 Hyperion (In serv. 27-2-77)

D: 1,200 tons (fl) S: 13 kts Dim: 67.7 × 10.0 × 4.7 M: 1 MWM TPD-484BU diesel; 1,750 hp

1 small harbor oiler

A 471 VIVIES

REMARKS: Cargo: 187 tons; S: 11 kts.

Note: Kronos (A 373), built in 1943, still exists as a fuel lighter, unpowered; cargo: 110 tons.

 1 ammunition ship Bldr: Dubigeon, Nantes

> Laid down In serv. 7-6-56 30-6-55 31-1-56

A 415 Evros (ex-German Schwarzwald, ex-French Amalthée)

D: 2,395 tons S: 15 kts Dim: 80.18 × 11.99 × 4.65 A: 4/40-mm AA (II × 2)

M: 1 Sulzer 6-SD-60 diesel; 3,000 hp Electric: 500 kw Range: 4,500/15 Man: 32 tot.

Remarks: Purchased 2-60 by the German Navy and converted for naval use, commissioning 11-10-61; transferred to Greece 2-6-76. 1,667 grt.

Bldr: Khalkis SY 1 new-construction water tanker

D: . . . S: . . . Dim: 67.0 × . . . × . . . M: . . .

REMARKS: 3,000 dwt. Ordered 3-85.

♦ 3 Doirani-class water lighters

A 434 Prespa (In serv. 10-10-72) A 467 Doirani (In serv. 1972) A 468 KALLIROE (In serv. 26-10-72)

D: 850 tons (ff) S: 13 kts Dim: 54.7 × 7.9 × 3.0

M: 1 diesel; . . . hp Cargo: 600 tons

Remarks: A 434 taken over from another government agency 1979. Very low freeboard.

1 ex-German FW 1-class water lighter

Bldr Laid down L In serv. A 433 Kerkini (ex-FW 3) Jadewerft, Wilhelmshaven 15-10-63 11-5-64 14-6-63



Kerkini (A 433)

L. & L. Van Ginderen, 12-84

AUXILIARY SHIPS (continued)

D: 598 tons (624 fl) S: 9.5 kts Dim: 44.03 (41.10 pp) × 7.80 × 2.63 M: 1 MWM 12-cyl, diesel; 1 prop; 230 hp Electric: 83 kw Range: 2,150/9 Man: 12 tot.

REMARKS: Transferred 22-4-76. Cargo: 350 m3,

• 2 miscellaneous small water lighters

A 470 Kastoria (In serv. . . .) — Cargo: 520 tons A 473 Trichonis (In serv. 1980) — Cargo: 650 tons

• 1 British Bustler-class salvage tug Bldr: Henry Robb, Leith

Laid down L In serv.
A 428 Atlas (ex-Nisos Zakynthos, 18-10-43 21-6-44 8-11-44 ex-HMS Mediator)

D: 1,118 tons (1,630 fl) S: 16 kts Dim: 62.48 (59.4 pp) × 12.32 × 5.18 A: . . . M: 2 Atlas diesels; 2 props; 3,200 hp Fuel: 340 tons Range: 3,400/11 Man: 42 tot.

Remarks: Purchased from British Navy 1965 by private owner. Acquired 1-8-79 by Greek Navy and commissioned 12-79.

• 3 Heraklis-class coastal tugs Bldr: Anastassiadis Tsortanidis, Perama

A 423 Heraklis (In serv. 6-4-78) A 425 Odisseus (In serv. 28-6-78) A 424 Jason (In serv. 6-3-78)

D: 345 tons S: 12 kts Dim: $30.0 \times 7.9 \times 3.4$ M: 1 MWM diesel; 1,200 hp

• 6 harbor tugs

A 410 Atromitos $\}$ (In serv. 20-6-68) — 1,260 hp, D: 310 tons A 411 Adamastos $\}$ Dim: $30.0 \times 7.9 \times 3.0$ A 412 Aias (ex-U.S. Ankachak, YTM 767) (Transferred 1972) — 650 hp A 421 Minotauros (ex-U.S. Army ST 539) (Transferred 1962) — 650 hp A 431 Titan (In serv. 1962) — 240 hp A 432 Gigas (In serv. 26-11-61) — 1,200 hp

♦ 2 lighthouse tenders Bldr: Anastassiadis Tsortanidis, Perama

A 479 I. Theophilopoulos Karavoyiannos (In serv. 2-1-76) A 481 St. Lykoudis (In serv. 17-3-76)



I. Theophilopoulos Karavoyiannos (A 479)

L. & L. Van Ginderen, 12-84

D: 1,350 tons (1,450 fl)
 S: 15 kts
 Dim: 63.24 (56.50 pp) × 11.6 × 4.0
 M: 1 MWM TBD-500-8UD diesel; 2,400 hp
 Man: 40 tot.

Remarks: Near sisters to hydrographic survey ship Naftilos. Have a helicopter deck.

• 5 miscellaneous floating cranes

COAST GUARD HARBOR CORPS

The Greek Coast Guard has some 4,000 personnel, most of whom are shore-based. There are some 80 small craft, the largest and newest of which are three units of the Dilos-class patrol boats, as described above. Five Cessna light aircraft are used for coastal patrol. The Greek Customs Service also operates about 20 boats in its Anti-Smuggling Flotilla.



DE 81 - Dilos-class patrol boat

H. Ehlers, 4-84



Patrol Boat DE 52 - DE 51-55 are of the same class

H. Ehlers, 5-84



8.23-m patrol craft DE 72

H. Ehlers, 5-84



Pollution-collection boat DE 24

H. Ehlers, 5-84

GRENADA

MERCHANT MARINE (1984): 3 ships - 425 grt

Bldr: Lantana Boatyard, Florida • 1 U.S. 106-ft patrol boat

PB 01 Tyrrel Bay (In serv. 21-11-84)



Tyrrel Bay (PB 01)

Lantana, 11-84

D: 94 tons (fl) S: 24 kts Dim: 32.31 × 6.25 × 2.13 (props)

A: 2/12.7-mm mg $(I \times 2) - 2/7.62$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/Furuno . . . nav.

M: 3 G.M. Detroit Diesel 12V71 TI diesels; 3 props; 2,250 hp

Electric: 100 kw Fuel: 21 tons Man: 4 officers, 12 men

REMARKS: Laid down 1-84 to U.S. Gov't order. Aluminum construction. Has a Magnavox MX4102 NAVSAT receiver.

Bldr: Brooke Marine, Lowestoft (In serv. 1972) ♦ 1 patrol craft

PB2

D: 15 tons (fl) **S:** 22 kts **Dim:** $12.2 \times 3.7 \times 0.6$ **A:** 3/7.62-mm mg (I × 3)

M: 2 Caterpillar diesels; 2 props; 740 hp

• 3 Spear-class patrol craft Bldr: Fairey Marine, Hamble, U.K. (In serv. . . . ?)

D: 10 tons (fl) **S:** 26 kts **Dim:** $9.10 \times 2.75 \times 0.84$

A: 2/7.62-mm mg (I × 2) M: 2 diesels; 2 props; 580 hp Man: 3 tot.

Note: PB 1 and the three Spear-class patrol craft were derelict at the time of the U.S. "invasion" in 1983; they have since been rehabilitated and put back in service.

GUATEMALA

Republic of Guatemala

Personnel (1984): 1000 total: 125 officers, 875 enlisted, including 700 Marines

MERCHANT MARINE (1984): 8 ships - 16,046 grt

PATROL BOATS AND CRAFT

Bldr: Halter Marine, New Orleans, La. • 1 U.S. Broadsword class

P 1051 KUKULKAN (In serv. 4-8-76)

D: 90.5 tons (fl) **S**: 32 kts **Dim**: $32.0 \times 6.3 \times 1.9$

A: 1/75-mm recoilless rifle - 1/81-mm mortar with a 12.7-mm mg atop it -2/12.7-mm mg (I \times 2)

M: 2 G.M. 16V149 TI diesels; 3,200 hp Electric: 60 kw Range: 1,150/20

Man: 5 officers, 15 men



Kukulkan - on trials with the Bitol (P 655), Picuda (P 361), and Barracuda (P 362) Halter, 1976

• 2 U.S. 85-foot Commercial Cruiser class

Bldr: Sewart Seacraft, Berwick,

P 851 Utatlan (In serv. 5-67) P 852 Subteniente Osorio Saravia (In serv. 1972)

D: 50 tons S: 23 kts Dim: 25.9 × 5.8 × 1.0

A: 2/12.7-mm mg—1/81-mm recoilless rifle
M: 2 G.M. diesels; 2 props; 2,200 hp Range: 780/15

Man: 7 officers, 10 men

• 5 U.S. Cutlass class Bldr: Halter Marine, New Orleans, La. (In serv. 1972-76)

P 651 TECUNUMAN P 653 AZUMANCHE P 655 BITOL

P 652 KAIBILBALAN P 654 TZACOL

D: 34 tons (fl) **S**: 25 kts **Dim**: $19.7 \times 5.2 \times 0.9$

A: 1/12.7-mm mg — 3/7.62-mm mg (I × 3) Man: 10 tot.

M: 2 G.M. 12V71 diesels; 2 props; 960 hp Electric: 20 kw Range: 400/15

• 30 river patrol craft Bldr: Trabejos Baros SY, Guatemala (In serv. 1979)

D: . . . tons S: 19 or 28 kts Dim: 9.14 × 3.66 × 0.61

A: 2/7.62-mm mg (I × 2)

M: 1 diesel; 1 prop; 150 or 300 hp Range: 400-500 nm

Remarks: Wooden construction - in two series, with different engines.

AMPHIBIOUS WARFARE CRAFT

• 2 U.S. Machete class Bldr: Halter Marine, New Orleans, La. (In serv. 4-8-76)

P 361 PICUDA P 362 BARRACUDA

D: 6 tons S: 36 kts Dim: 11.0 × 4.0 × 0.76 M: 2 G.M. 6V53 PI diesels; 2 water jets; 540 hp

Remarks: Troop carriers. Square bows, aluminum construction.

♦ 1 ex-U.S. LCM (6) class

561 CHINALTENANGO

D: 24 tons (56 fl) **S**: 10 kts **Dim**: 17.07 × 4.37 × 1.17 (aft)

A: 2/12.7-mm mg $(I \times 2)$

M: 2 Gray Marine 64HN9 diesels; 2 props; 450 hp Range: 130/10

Remarks: Transferred in 12-65. Cargo: 30 tons.

HYDROGRAPHIC SHIP

◆ 1 new-construction coastal survey craft (In serv. 1981)

D: . . . S: . . . Dim: 19.8 × . . . × . . .

Personnel (1984): 600 total

MERCHANT MARINE (1984): 18 ships - 6,944 grt

CORVETTE

1 ex-Soviet T 58-class minesweeper

LAMINE SADJI KABA

D: 750 tons (860 fl) **S**: 17 kts **Dim**: 70.0 × 9.1 × 2.5 A: 4/57-mm AA - 2/RBU-1200 ASW RL (V × 2) - mines Electron Equipt: Radar: 1/Don-2, 1/Muff Cob Man: 60 tot.

M: 2 diesels; 2 props; 4,000 hp Range: 2,500/13.5

GUINEA (continued) CORVETTE (continued)

Remarks: Transferred 5-79. Unlike Soviet Navy units that were redesignated patrol ships, has had all mine countermeasures equipment removed, including the sweep winch.

PATROL BOATS AND CRAFT

• 1 U.S. 77-ft class Bldr: Swiftships, Morgan City, La.

P 300 Vigilante (In serv. 7-85)



Vigilante (P 300)

Swiftships, 6-85

D: 47.6 tons (fl) **S**: 26 kts **Dim**: $23.47 \times 6.10 \times 1.52$ A: 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 1/. . . nav.

M: 3 G.M. 12V71 T1 diesels; 3 props; 2,385 hp

Range: 600/18 Man: . .

Remarks: Ordered 7-85. Aluminum construction.

Bldr: Swiftships, Inc., Morgan City, La. (In serv. 6-85) 1 U.S. 65-ft-class

D: 36.3 tons (fl) S: 24 kts Dim: 19.96 × 5.61 × 1.52 A: 1/12.7-mm mg - 2/7.62-mm mg - 1/81-mm mortar

Electron Equipt: Radar: 1/. . . nav.

M: 2 G.M. 12V71 TI diesels; 2 props; 1,590 hp

Range: 500/18 Man: 10 tot.

Remarks: Aluminum construction. Resembles El Salvador's GC-11 (see addenda).

• 2 U.S. Stinger class Bldr: Monark, Monticello, Arkansas

P-30 P-35



Guinea's two Stinger-class patrol craft

MonArk, 1985

D: 2.7 tons (fl) S: 35 kts Dim: 7.92 × 3.25 × 0.91

A: 2/12.7-mm (I × 2) Electron Equipt: Radar: 1/Raytheon 1200 nav. M: 2 OMC 55 XL "Commercial" outboard motors; 310 hp Man: 4 tot.

Remarks: Ordered 10-84. Camouflaged in three shades of green.

◆ 2 U.S. 26-ft patrol craft A: 2/12.7-mm mg (I × 2)

Bldr: MonArk, Monticello, Arkasas (In serv. 7-85)

• 6 Chinese Shanghai-II class

P 733 P 734 P 735 P 736 P 737 P 738

D: 122.5 tons (134.8 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55

A: 4/37-mm AA (II \times 2) -4/25-mm AA (II \times 2)

Electron Equipt: Radar: 1/Pot head Electric: 39 kw

M: 2 M50F-4 diesels (1,200 hp each), 2 12D6 diesels (910 hp each); 4 props; 4,220 hp

Range: 750/16.5 Endurance: 7 days Man: 36 tot.

Remarks: Four transferred 1973-74, two in 1976.

* 3 ex-Soviet Shershen-class former torpedo boats

D: 150 tons (170 fl) S: 45 kts Dim: 34.7 × 6.7 × 1.5 A: 4/30-mm AA (II × 2) Range: 460/42; 850/30 Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole

M: 3 M503A diesels; 3 props; 12,000 hp Man: 24 tot.

Remarks: Two delivered 1978, one in 1979. Torpedo tubes removed prior to transfer.

Bldr: Chantiers Navals de l'Estérel, Cannes • 1 French 28-m class

P 400 Almariy Bocar Biro Barry (In serv. 8-79)

D: 56 tons (fl) S: 35 kts Dim: 28.0 × 5.2 × 1.6 A: 1/20-mm AA M: 2 MTU 12V331 TC82 diesels; 2 props; 2,600 hp Range: 750/15 Man: 12 tot.

2 ex-Soviet Poluchat-I class

D: 70 tons (90 fl) S: 18 kts Dim: 29.6 × 5.8 × 1.5 A: 2/14.5-mm mg (II × 1) Man: 20 tot. Electron Equipt: Radar: 1/Spin Trough IFF: 1/High Pole A

M: 2 M50-series diesels; 2 props; 2,400 hp Range: 450/17; 900/10

GUINEA-BISSAU

Republic of Guinea-Bissau

Personnel (1984): 250 total

Merchant Marine (1984): 15 ships - 3,677 grt

PATROL BOATS AND CRAFT

2 Chinese Shanghai-II class

D: 122.5 tons S: 28.5 kts Dim: 38.78 × 5.41 × 1.55 A: 4/37-mm AA (II × 2) — 4/25-mm AA (II × 2)

Electron Equipt: Radar: 1/Pot Head

M: 2 M50F4 diesels (1,200 hp each), 2 12D6 diesels (910 hp each); 4 props; 4,220 hp Man: 36 tot. Range: 750/16.5 Electric: 39 kw Endurance: 7 days

Remarks: Transferred late 1983.

• 1 Dutch PT 1903 Mk III class

Bldr: Le Comte, Vianen, The Netherlands

NAGA (In serv. 5-81)

D: 30 tons (33 fl) S: 30 kts Dim: 19.27 × 4.95 × 1.25

A: 2/12.7-mm mg (I × 2) Range: 1,650/17; 2,300/12 Man: 10 tot.

M: 2 MTU 8V331 TC92 diesels; 2 props; 1,770 hp

1 ex-Soviet Shershen-class former torpedo boat

D: 150 tons (170 fl) S: 45 kts Dim: 34.7 × 6.7 × 1.5 A: 4/30-mm AA (II × 2) Man: 24 tot. Electron Equipt: Radar: 1/Pot Drum, 1 Drum Tilt

IFF: 1/Square Head, 1/High Pole A M: 3 M503A diesels; 3 props; 12,000 hp Range: 460/42; 850/30

Remarks: Transferred 12-78. Torpedo tubes removed prior to transfer.

♦ 1 ex-Soviet Poluchat-I class

D: 70 tons (90 fl) S: 18 kts Dim: 29.6 × 5.8 × 1.5 A: 2/14.5-mm mg (II × 1) Electron Equipt: Radar: 1/Spin Trough M: 2 M50-series diesels; 2 props; 2,400 hp Range: 450/17; 900/10 Man: 20 tot.

REMARKS: Transferred 1978.

◆ 2 French Plascoa-1900 class (In serv. . . .)

CABO ROXO ILHA DE POILÃO

D: 30 tons (fl) S: 25 kts Dim: 19.0 × 5.35 × 1.2 A: 2/12.7-mm mg (I × 2) M: 2 G.M. diesels; 2 props; 1,050 hp

Range: 650/25; 1,500/9

GUINEA-BISSAU (continued)

PATROL BOATS AND CRAFT (continued)

♦ 3 Spanish LVC-1 class Bldr: Aresa, Barcelona (In serv. 1979)

D: 20.8 tons (fl) S: 23.3 kts Dim: 16.00 × 4.36 × 1.30

A: 1/12.7-mm mg M: 2 Baudouin DNP-8 M1R diesels; 2 props; 700 hp

Range: 400/18 Man: 6 tot.

AUXILIARIES AND SERVICE CRAFT

♦ 1 ex-Soviet Biya-class survey ship and buoy tender Bldr: Gdansk, Poland

D: 750 tons (fl) S: 13 kts Dim: $55.0 \times 9.2 \times 2.6$ Electron Equipt: Radar: 1/Don-2 M: 2 diesels; 2 CP props; 1,200 hp

Range: 4,700/11 Man: 25 tot.

Remarks: Transferred 6-78. One 5-ton buoy crane; one inshore survey launch; one 15-m² oceanographic laboratory.

◆ 2 ex-Soviet T4-class landing craft

D: 70 tons (fl) S: 10 kts Dim: 19.0 × 4.3 × 1.0

M: 2 diesels; 2 props; 600 hp Man: 5 tot.

Remarks: Employed in logistic support duties.

GUYAN

Cooperative Republic of Guyana

Personnel (1984): 150 total

Merchant Marine (1984): 104 ships - 24,231 grt (tankers: 2 ships - 933 grt)

NAVAL AVIATION: 1 Embraer EMB111 Bandeirante for coastal surveillance

2 ex-North Korean patrol boats

D: 35 tons (fl) **S:** 40 kts **Dim:** $18.3 \times 3.4 \times 1.7$ **A:** 2/14.5-mm mg (I × 2)

M: 2 gasoline engines; 2 props; . . . hp Man: 9 tot.

Remarks: Transferred 1980

♦ 1 103-foot British patrol boat

Bldr

DF 1010 PECCARI Vosper Thornycroft, Portsmouth, 26-3-76 26-1-77

U.K.

D: 96 tons (109 fl) S: 27 kts Dim: 31.4 × 6.0 × 1.6

A: 2/20-mm AA ($I \times 2$)

M: 2 Paxman Ventura 12-cyl. diesels; 2 props; 3,500 hp

Range: 1,400/14 Man: 22 tot.

Remarks: A second unit was ordered in 1977, but was canceled because of lack of funds.

♦ 3 patrol boats Bldr: Vosper Thornycroft, U.K.

JAGUAR (In serv. 28-4-71) MARGAY (In serv. 21-5-71) OCELOT (In serv. 22-6-71)

D: 10 tons **S**: 20 kts **Dim**: $14.0 \times 3.4 \times 2.0$ **A**: 1/7.62-mm mg

M: 2 Cummins D366A diesels; 2 props; 270 hp Range: 150/12 Man: 6 tot.

Remarks: Fiberglass hull; light-alloy superstructure.

♦ 3 45-foot boats, supplied by the U.S.

CAMOUDIE LABANA RATTLER

♦ 2 ex-fishing boats

EKEREKU NUMBER 2

Note: Guyana also received the ex-U.S. Navy tug YTM 190 and the covered barge YFN 960, both operated by the Guyana Harbor Board. The 600 grt. ramped cargo ship Kimbla, delivered to the Guyana government by Damen, the Netherlands, in 1981, is also non-naval.

Republic of Haiti

Personnel (1984): 40 officers, 260 men

MERCHANT MARINE (1984): 6 ships -1,762 grt

COAST GUARD

PATROL BOATS AND CRAFT

♦ 3 U.S. 65-foot Commercial Cruiser class Bldr: Sewart, Louisiana (In serv. 1976)

MH 21 JEAN CLAUDE DUVALIER

MH 22 N. MH 23 N.

D: 33 tons (fl) S: 25 kts Dim: 21.3 × 5.2 × 1.0

A: 1/20-mm AA -2/12.7-mm mg (I \times 2)

M: 3 G.M. 8V-71 diesels; 3 props; 1,590 hp

Remarks: MH 21, cannibalized 1982 for parts, refitted for service 11-84.

• 9 U.S. 3812-VCF class 1980-81)

Bldr: MonArk, Monticello, Arkansas (In serv.

MH 11 LE MAROON MH 14 CAPOIS LA MORT

MH 17 CHARLEMAGNE PERRAULT

MH 12 OGE MH 15 BAUCKMAN MH 18 Sonthonax MH 13 CHAVANNES

MH 24 BOISROND TONNEREE MH 16 MAKANDAL



Oge (MH 12)

MonArk Boat Co., 1980

D: 8.5 tons (9.0 fl) S: 25 kts Dim: 12.34 × 4.11 × . . .

A: 1/12.7-mm mg — 2/7.62-mm mg (I × 2)
M: 2 G.M. 6V-71N diesels; 2 props; 480 hp Man: 4 tot.

• 1 U.S. Enforcer class Bldr: Bertram, Miami

MH 6

In serv.

Dim: $9.5 \times ... \times ...$ M: 2 Caterpillar 3160 diesels; 2 props; 420 hp

AUXILIARIES

1 U.S. Sotoyomo-class auxilliary ocean tug

Bldr

Laid down 5-6-44

In serv. 14-7-44 27-9-44

MH 20 HENRI CHRISTOPHE Levingston SB, (ex-Samoset, ATA 180)

Orange, Tx.

D: 689 tons (835 fl) **S:** 13 kts **Dim:** 43.6 (40.75 pp) \times 10.37 \times 3.65 **A:** 2/40-mm AA (I \times 2) — 2/12.7-mm mg (I \times 2)

M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp

Electric: 120 kw Fuel: 154 tons Range: 16,500/9 Man: 40 tot.

REMARKS: MH 20 transferred 18-9-78. One 40-mm on fantail, one forward. Transfer of sister Keywadin (ATA 213) for use in oceanographic research canceled 1981.

HONDURAS

Republic of Honduras

Personnel: Approx. 250 total

Merchant Marine (1984): 238 ships - 276,736 grt (tankers: 33 ships - 48,806 grt)

NAVAL AVIATION: Four Embraer EMB111 Bandeirante delivered 1983 for coastal surveillance: flown by naval crews.

PATROL BOATS AND CRAFT

 2 U.S. 106-foot class Bldr: Lantana Boatyard, Lantana, Florida

Laid down In serv. 1983 6-82 FN 1054 TEGUCIGALPA 20-5-84 FN 1055 Comayaguela 4-83

HONDURAS (continued) PATROL BOATS AND CRAFT (continued)



Comayaguela (FN 1055) - on trials

Lantana Boatyard, 1984

D: 94 tons (fl) **S:** 35 (FN 1055: 33) kts **Dim:** $32.31 \times 6.25 \times 2.13$ (props) A: 1/20-mm Sea Vulcan gatling gun - 2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/Furuno . . . nav.

M: FN 1054: 3 G.M. Detroit Diesel 16V92 TI diesels; 3 props; 3,900 hp FN 1055: 3 MTU 8V96 TB93 diesels; 3 props; 3,525 hp (3,000 sust.) Electric: 100 kw Fuel: 21 tons Man: 4 officers, 12 men

Remarks: Aluminum construction. Have Magnavox MX 4102 NAVSAT receiver and two echo-sounders.

• 3 U.S. 105-foot class Bldr: Swiftships, Morgan City, Louisiana

FN 1051 Guaymuras (In serv. 4-77) FN 1053 HIBURES (In serv. 3-80) FN 1052 Honduras (In serv. 3-80)



Honduras (FN 1052)

Swiftships, Inc., 3-80

D: 103 tons (fl) S: 32 kts Dim: 31.5 × 6.6 × 2.1 A: . . . M: 2 MTU diesels; 2 props; 7,000 hp Range: 1,200/18 Man: 16 tot.

♦ 1 U.S. 85-foot Commercial Cruiser class Bldr: Swiftships, Morgan City, Louisiana

FN 8502 Chamelecon (In serv. . . .)

D: 50 tons S: 23 kts Dim: 25.9 × 5.8 × 1.0

A: . . . M: 2 G.M. 12V71 TI diesels; 2 props; 2,200 hp Range: 780/15 Man: 17 tot.

♦ 5 U.S. 65-foot Commercial Cruiser class

Bldr: Swiftships, Morgan City,

In serv. In serv. FN 6501 NACAOME (ex-Aguan, ex-Gral) 12-73 FN 6504 Ulua 1980 FN 6502 GOASCORAN (ex-J.T. Cabanas) 1-74 FN 6505 CHULUTECA 1980 FN 6503 PETULA 1980

D: 33 tons (fl) **S:** 25 kts **Dim:** 21.3×5.2

A: 2/12.7-mm mg (I × 2) M: 3 G.M. 8V71 diesels; 3 props; 1,590 hp Range: 2,000/22 Man: 5 tot.

Remarks: First two originally ordered for Haiti and delivered to Honduras in 1977. Others, ordered 1979, have 3 MTU diesels and can make 36 kts.

Bldr: Ampela Marine, Honduras (In serv. 1981-82) • 2 inshore patrol craft

FN 2501 N. FN 2502 N.

D: 3 tons (fl) **S:** 24 kts **Dim:** $7.62 \times 2.74 \times 0.38$

A: 1/12.7-mm mg — 1/7.62-mm mg

M: 1 Chrysler 6M655 TI diesel, waterjet drive; . . . hp Range: 250/18

Man: 4 tot.

Remarks: Built of wood and glass-reinforced plastic.

♦ 1 ex-U.S. Coast Guard Hollyhock-class buoy tender

In serv. Moore Drydock Co., FN . . . Hogal (ex-Walnut) 27-6-39 Oakland, Cal.

D: 825 tons (986 fl) S: 12 kts Dim: 53.4 × 10.4 × 3.7 M: 2 diesels; 2 props; 1,350 hp Range: 6,500/12; 10,000/7.5 Man: 40 tot.

Remarks: Transferred 1-7-82 for navigational support duties. One 20-ton buoy crane.

• 6 miscellaneous ex-fishing boats for logistics support

FN 7501 JULIANA FN 7503 CARMEN FN 7505 Yosuro FN 7502 SAN RAFAEL FN 7504 Mairy FN 7506 Jose Gregori

HONG KONG

British Crown Colony of Hong Kong

Merchant Marine (1984): 340 ships - 5,784,336 grt (tankers: 40 ships - 1,286,410 grt)

Note: In addition to the craft listed below, the Royal Navy maintains five Peacock-class corvettes at Hong Kong. The Royal Hong Kong Auxiliary Air Force operates one BN-42B/T Maritime Defender and 2 SA Bulldog 128 aircraft for coastal patrol, and 3 SA.365C Dauphin helicopters for rescue work.

ROYAL HONG KONG POLICE FORCE MARINE DISTRICT

Personnel (1984): 160 officers, 3,105 men

PATROL BOATS

♦ 10 (+5) King Lai class Bldr: Chung Wah SB & Eng, Kowloon

| | Laid down | L | In serv. | |
|------------------|-----------|----------|----------|--|
| PL 70 King Lai | 28-2-84 | 14-7-84 | 29-10-84 | |
| PL 71 KING YEE | 28-2-84 | 17-7-84 | 29-11-84 | |
| PL 72 King Lim | 28-2-84 | 29-7-84 | 17-12-84 | |
| PL 73 King Hau | 15-3-84 | 2-11-84 | 31-1-85 | |
| PL 74 King Dai | 15-3-84 | 8-11-84 | 28-2-85 | |
| PL 75 King Chung | 15-3-84 | 12-11-84 | -85 | |
| PL 76 King Shun | 17-8-84 | 26-1-85 | -85 | |
| PL 77 King Tak | 25-8-84 | 4-2-85 | -85 | |
| PL 78 King Chi | 17-8-84 | 1-2-85 | -85 | |
| PL 79 King Tai | 1-12-84 | -85 | -85 | |
| PL 80 King Kwan | 1-12-84 | -85 | -86 | |
| PL 81 King Mei | 1-12-84 | -85 | -86 | |
| PL 82 King Yan | 3-85 | -85 | -86 | |
| PL 83 King Yung | 3-85 | -85 | -86 | |
| PL 84 King Kan | 3-85 | -85 | -86 | |
| | | | | |

D: 85 tons (normal) S: 25 kts Dim: 26.50 (24.27 pp) × 5.80 × 1.80

A: 1/7.62-mm mg Electron Equipt: Radar: 1/. . . nav.

M: 2 MTU 12V396 TC83 diesels (1,483 hp each); 1/M.A.N. MB OM-424A V-12 cruise diesel (465 hp); 2 props, 1 waterjet

Range: 600/14; 1,400/8 Man: 17 tot.

REMARKS: PL 70-78 ordered 10-83; PL 79-81 ordered 1/12/84, Modified version of the PL 60 class; Damen Stan Patrol 2600/Chung Wah Mk 3 design. Can make up to 7 kts on the centerline waterjet. Carry an Avon SeaRaider semi-rigid inspection boat.

HONG KONG (continued) PATROL BOATS (continued)

Note: These craft replace the 65-ft Islander (PL 6), 78-ft Sea Horse (PL 4), and nine 70-ft craft: Sea Rover (PL 26), Sea Farer (PL 27), Sea Roamer (PL 28), Sea Rider (PL 29), Sea Nomad (PL 30), Sea Wanderer (PL 31), Sea Raker (PL 32), Sea Rescuer (PL 33), and Sea Ranger (PL 34); all were stricken 1984-85, except PL 30, PL 32 in 1983. Also disposed of was the support craft Panther (PL 3).

Bldr: Hong Kong United DY (In serv. 1965) 2 command boats

PL 1 SEA LION PL 2 SEA TIGER

D: 222 tons (fl) S: 11.8 kts Dim: 33.9 × 7.3 × 3.2

A: 1/12.7-mm mg M: 2 Cummins diesels; 2 props; 674 hp Range: 5,200/11.8 Man: 29 tot.

Bldr: Chung Wah SB & Eng, Kowloon • 10 Damen-design

| | In serv. | | In serv. |
|--------------|----------|---------------|----------|
| PL 60 N | 2-80 | PL 65 Cetus | 2-9-80 |
| PL 61 PISCES | 2-80 | PL 66 DORADO | 8-9-80 |
| PL 62 N | 2-80 | PL 57 MERCURY | 26-1-82 |
| PL 63 N | 1980 | PL 58 VULCAN | 22-3-82 |
| PL 64 N | 1980 | PL 59 Ceres | 29-3-82 |



D: 86 tons (normal) S: 23 kts Dim: 26.2 × 5.9 × 1.80

A: 1/12.7-mm mg Electron Equipt: Radar: 1 Decca 150

M: 2 MTU 12V396 TC82 diesels (1,300 hp each), 1 M.A.N. D2566 cruise diesel (195 hp); 3 props (Schöttel on centerline); 2,600 hp

Range: 1,400/8 Man: 1 officer, 13 men

Remarks: First unit laid down 9-79 to a Dutch design. Cruise engine provides 7-8 kt. max. speeds. PL 67-89 ordered 3-81 for logistic support duties, with same engines, but waterjet vice Schöttel propeller for cruise (2 to 7 kts): have restricted patrol range, but have a cargo hold.

♦ 7 78-foot craft

Bldr: Vosper Thornycroft, Singapore (In serv. 5-72 to 5-73)

PL 50 SEA CAT PL 51 SEA PUMA PL 52 SEA LEOPARD PL 53 SEA EAGLE

PL 55 SEA LYNX

PL 54 SEA HAWK

PL 56 SEA FALCON



Sea Eagle (PL 53)

G. Arra, 1980

D: 82 tons (fl) S: 20.7 kts Dim: 23.7 × 5.2 × 1.7 A: 1/12.7-mm mg M: 2 Cummins diesels; 2 props; 1,500 hp Range: 4,000/20 Man: 16 tot.

7 45-foot converted wooden tugs

Bldr: Australia (In serv. 1944-45)

PL 9 SNIPE PL 10 PUFFIN PL 11 WREN PL 13 GULL

PL 14 TERN PL 15 CORMORANT PL 16 KESTREL

D: 27.7 tons S: 9 kts Dim: 13.7 × 4.6 × 2.1

A: Small arms M: 1 Gardner diesel Range: 1,700/8 Man: 5 tot.



Kestrel (P 16)

G. Arra

• 3 40-foot patrol launches Bldr: Cheoy Lee SY (In serv. 1971)

WJB 20 JETSTREAM WJB 21 SWIFTSTREAM WJB 22 TIDESTREAM

D: 17 tons S: 24 kts Dim: 12.3 × 3.5 × 0.6 A: Small arms M: 2 diesels; 2 props; 740 hp Range: 380/24 Man: 5 tot.

REMARKS: To be stricken 1986.

• 9 30-foot Spear class

Bldr: Fairey Allday Marine, Hamble (In serv. 1981)

PL 37 to PL 45

D: 4.5 tons (fl) S: 28 kts Dim: 9.10 × 2.89 × 0.84

A: 1/7.62-mm mg M: 2 Perkins T6.3544 diesels; 2 props; 370 hp Range: 250/25 Man: 4 tot.

Remarks: Glass-reinforced plastic construction.

MISCELLANEOUS CRAFT

Bldr: Reliance Marine, Salisbury, U.K. ♦ 1 support launch

PL. . . N. (In serv. 5-82)

D: 3 tons (fl) S: 25 kts Dim: 8.8 × 2.9 × 0.76

M: 1 Volvo Penta AQAD-40/280 diesel; 155 hp Man: 4 tot.

• 1 personnel launch

Bldr: Hip Hing Cheung SY (In serv. 1975)

PL 7 DRAGON

D: 18.5 tons S: 23.5 kts Dim: 16.0 × . . . × . . .

A: Small arms M: 2 diesels; 2 props; 700 hp Range: 300/20 Man: 6 tot.

Note: The eleven PMB 35-series personnel launches were disposed of 1982-84.

Hungarian People's Republic

Personnel: Approx. 500 total

MERCHANT MARINE (1984): 21 ships - 79,994 grt

HUNGARIAN ARMY MARITIME FORCE

Bldr: Brodotehnika, ◆ 1 Yugoslav Nestin-class minesweeper/patrol boat Belgrade

D: 66 tons (78 fl) S: 15 kts Dim: 27.00 × 6.50 × 1.15 max. A: 5/20-mm AA (III × 1, I × 2) - 24 small mines

Electron Equipt: Radar: 1/Decca 101 Man: 17 tot. M: 2 diesels; 2 props; 520 hp Range: 860/11

Remarks: Has 2 flare/chaff RL. Sweep gear includes PEAM magnetic/acoustic sweep, AEL-1 explosive sweep, and MDL-1 and -2 mechanical wire sweeps. Sisters in Yugoslav and Iraqi navies. Transferred circa 1982-83. There are also several other small river minesweepers.

(In serv. early 1960s) • 10 river patrol craft

D: 10 tons S: . . . Dim: . . . × . . . × A: 1/14.5-mm mg M: 2 diesels

- 5 landing craft
- · several small tugs
- ◆ several river transports—of up to 1,000 tons

ICELAND

Republic of Iceland

Personnel: 160 men

Merchant Marine (1984): 395 ships - 178,641 grt (tankers - 4 ships - 2,971 grt)

AVIATION: 2 Fokker F-27 Friendship patrol aircraft, 1 Hughes helicopter, and several Sikorsky S-76 helicopters (one of which was lost 6-11-83).

Note: All guns are "quick-firing," single-shot weapons manufactured in the mid-1890s at the Royal Dockyard, Copenhagen.

COAST GUARD

FISHERIES-PROTECTION SHIPS

♦ 2 Aegir class

 Bldr
 L
 In serv.

 Aegir
 Aalborg SY, Denmark
 1967
 1968

 Tyr
 Dannebrog Vaerft,
 10-10-74
 15-3-78

 Aarhus, Denmark
 Aarhus, Denmark
 10-10-74
 15-3-78



Tyr 1975

D: 1,150 tons (1,500 ft) **S:** 20 kts **Dim:** 69.84 (62.18 pp) \times 10.02 \times 5.02 **A:** 1/57-mm (6-pdr.)

M: 2 M.A.N. R8V 40/54 diesels; 2 KaMeWa CP props; 8,600 hp Electric: 630 kVA Range: 10,000/19 Man: 22 tot.

REMARKS: Although built ten years apart, these two ships are nearly identical. Helicopter hangar between twin stacks. Three radar sets, fish-finding sonar. 20-ton bollard-pull towing winch, passive rolling tanks. Tyr is 70.90 m o. a.

• 1 Odinn class

Bldr Laid down L In serv.
ODINN Aalborg SY, Denmark 1-59 9-59 1-60

D: 1,000 tons (fl) **S:** 18 kts **Dim:** 63.63 (56.61 pp) \times 10.0 \times 4.8

A: 1/57-mm (6-pdr.) low-angle Range: 10,000/18

M: 2 Burmeister & Wain diesels; 2 props; 5,050 hp Man: 22 tot.

Remarks: Rebuilt in 1975 with hangar, helicopter deck, and passive antirolling tanks.

Note: The fisheries patrol ship *Thor* was sold to Norway early in 1984.

♦ 1 former lighthouse tender Bldr: Bodewes, Netherlands (In serv. 1962)

ARVAKUR

D: 716 tons (fl) S: 12 kts Dim: 32.3 × 10.0 × 4.0 A: 1/12.7-mm mg M: 1 Deutz diesel; 1,000 hp Man: 12 tot.

Remarks: Transferred to the Coast Guard in 1969.

 1 Nelson 45-foot customs launch 1978)
 Bldr: W. S. Souter, Cowes, U.K. (In serv.

S: 17 kts M: 2 Cummins V555M diesels

. . . 21-SS Smuggler-class patrol launches Bldr: Norway, 1975

S: 36 kts M: Castoldi water jets

INDIA

Republic of India

Personnel (1984): Approx. 47,000 total

 $Merchant \, Marine \, (1984); \,\, 710 \, ships \, -6,414,741 \, grt \, (tankers; \, 70 \, ships \, -2,125,362 \, grt)$

NAVAL AVIATION: The Navy has 14 Magic-missile-equipped Sea Harrier FRS Mk 51 V/STOL fighters, 2 Mk 60 Harrier 2-seat trainers, and 11 Bréguet Alizé fixed-wing planes, and 14 Sea King (11 Mk 42, plus 3 Mk 42A delivered 8-80) and 19 Alouette-III helicopters. Five Soviet Ka-25 Hormone-A helicopters were delivered for the newly transferred Kashin-class guided-missile destroyers. The Indian Air Force has turned over to the Navy 5 Lockheed Constellations for long-range reconnaissance, while the U.S.S.R. has delivered 3 II-38 May aircraft. In 7-83, 12 Sea King Mk 42B helicopters, armed with Sea Eagle missiles and equipped with Sintra-Alcatel MS-12 dipping sonars, were ordered from Britain; an additional 8 were ordered in 7-85. Support aircraft include 2 Devon transports, 4 Hughes 300 helicopters, 4 Vampire T55 jet trainers, and 7 H3T 16 Kiran trainers. Twelve BN-42B/T Maritime Defender aircraft were ordered for surveillance duties in 1982. The first HAL-built Dornier 228 was delivered 7-85, and a planned 25 more equipped for coastal ASW surveillance will follow. Ten Mk 51 and one two-seat Mk 60 Harriers are on order. The U.S.S.R. is to deliver 18 Ka-27 Helix ASW helicopters and 3 Tu-142M Bear F long-range patrol aircraft, possibly beginning in 1985.



Indian Navy I1-38 May ASW aircraft

U.S. Navy, 1981

Weapons and Sensors: A mixture of Western (primarily British and Dutch) and Soviet weapons and sensors, with Western designs built in India under license. U.S. Harpoon anti-ship missiles were offered in 5-85. Hindustan Aeronautics Ltd. is developing an air-to-ground missile for Air Force and Navy use; it will have a range of 100 km at Mach 4 to Mach .85 at 30,000-foot altitude and will have a 35-kg payload. An unspecified number of French MM 38 Exocet missiles were ordered during 1982, possibly as replacements for obsolescent Soviet SS-N-2a Styx weapons.

Warships In Service, Under Construction, Or Projected As Of 1 January 1986

Note: A new construction agreement was reached with the Soviet Union on 20-12-82. According to Pacific Defense Reporter magazine for 3-83, the program includes at least 16 new ships, and their completion will give India the most powerful indigenous Indian Ocean naval force. The program reportedly includes: 3 Kresta-II-class cruisers, 3 additional Kashin guided-missile destroyers, 3 or more Nanuchka or Tarantul guided-missile corvettes, 4-6 Natya minesweepers, and 3-4 Kilo-class submarines. In addition to the Soviet order, there is a vigorous domestic construction program.

| | L | Tons | Main armament |
|----------------------|---------|-------------------|---|
| • 1 aircraft carrier | | | |
| 1 GLORY | 1945 | 15,700 | 15 aircraft |
| ♦ 0 (+3) cruisers | | | |
| 0 (+3) Kresta-II | 3 101 | 6,000 | **** |
| ♦ 8 (+7+) submari | nes | | |
| | (5 | Tons submerged | 1) |
| 0 (+3+) Kilo | 1985 | 3,000 | 6/533-mm TT |
| 0 (+4) Type 209 | 1985 | | 8/533-mm TT |
| 8 Foxtrot | 1965 | 2,400 | 10/533-mm TT |
| ◆ 3 (+3) destroyers | | | |
| 3 (+3) Kashin | 1963-72 | 3,500 | 2/Goa SAM, 4/SS-N-2C, 2/76- mm, ASW weapons, 1 heli- copter |
| ♦ 13 (+7) frigates | | | |
| 0 (+6) Project 15 | | 4,000 | |
| 2 (+1) Godvari | 1980 | 3,000 | 4/SS-N-2C, 1/SA-N-4, 4/57- mm, 1 helicopter |

WARSHIPS IN SERVICE (continued)

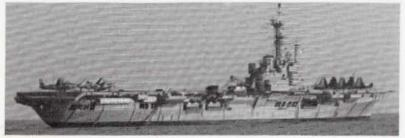
| 1968-77 | 2,250 | 2/114-mm, 1 or 2/Sea Cat, 1 helicopter |
|---------|-----------------|--|
| 1957-59 | 2,250 | 2/114-mm DP, 1/Squid |
| 1958 | 2,144 | 3/SS-N-2, 2/Limbo |
| | | |
| | 480 | 4/SS-N-2C, 1/76-mm DP |
| | 900 | |
| 1977-78 | 600 | 4/SS-N-2C, 1/SA-N-4, 2/57- mm |
| 1963 | 950 | 4/76.2-mm DP, 3/533-mm TT |
| | 1957-59 1958 | 1957-59 2,250 1958 2,144 480 900 1977-78 600 |

- 14 guided-missile patrol boats
- ◆ 13 (+4-6) minesweepers
- ♦ 8 (+ . . .) amphibious ships

AIRCRAFT CARRIER

* 1 Glory class Bldr: Vickers-Armstrong

Laid down L In serv. 22-9-45 R 11 VIKRANT (ex-Hercules) 14-10-43 4-3-61



Vikrant (R 11) - prior to recent refit

D: 15,700 tons (19,500 fl) S: 24 kts (fl), 17 kts cruising

Dim: 211.25 (198.0 wl) × 24.29 × 7.15

A: 7/40-mm (I × 7) - 6 Sea Harrier, 9 other aircraft

Electron Equipt: Radar: 1/ZW-06, 1/DA-05, 1/LW-08

M: 2 sets Parsons GT; 2 props; 40,000 hp Boilers: 4 Admiralty; 28 kg/cm² Fuel: 3,200 tons

Range: 6,200/23; 12,000/14 Man: Peacetime: 1,075 tot.; wartime: 1,340 tot.

Remarks: Bought in Great Britain in 1-57 while still incomplete. Air-conditioned. One hangar, two elevators, angled flight deck, steam catapult. Flight deck: 210 × 34. Modernized 1979 to 3-1-82 with new boilers, engines, new CIC, and new Dutch-design radars. Bofors L 70 single 40-mm AA in place of original British Mk 5 twin and Mk 9 single mountings. A further refit from 12-82 to 2-83 made the ship ready for its Sea Harrier complement, but did not include a planned ski-jump ramp. Catapult and arrester gear were retained to permit continued use of Alizé ASW aircraft. With the delivery of additional Sea Harriers in 1984 and later, the Alizés are moving ashore, and the long-planned ski jump is apparently being added. The ship also carries Chetak (Alouette-III) helicopters equipped for ASW and may carry Sea Kings, although the latter cannot be accommodated in the hangar. The ship received the IPN-10 combat data system in 1985.

Note: A 30-40,000 ton replacement for Vikrant, to be built in India, is under design, but would not be available until the 1990s. In 1985, the Indian Navy was discussing the purchase of the 28,700-ton HMS Hermes.

SUBMARINES

 ◆ 0 (+3 + . . .) Soviet Kilo class Bldr: . . . (In serv. 1985-. . .)

D: 2,500/3,000 tons S: 12/16 kts Dim: 70.0 × 9.5 × . . .

A: 6/533-mm TT (fwd) - possible SAM system

M: 2 diesels, electric drive; 1 prop; 3,500-4,000 hp Man: 60 tot.

REMARKS: Reportedly ordered 4-84. Soviet units are built at Komsomolsk-na-Amur and at Gorkiy SY. First unit was scheduled to deliver 1985. India was also reported to be discussing the acquisition of nuclear-powered submarines from the U.S.S.R. in 4-85, but acquisition in near-term is very unlikely.

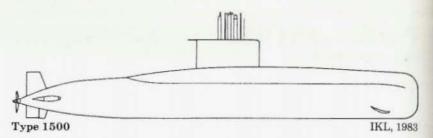
♦ 0 (+4) West German Type SSK-1500

| | Bldr | Laid down | L | In serv. |
|--------|---------------------|-----------|---|----------|
| S 44 N | Howaldtswerke, Kiel | 2-84 | | 1986 |
| S 45 N | Mazagon DY, Bombay | 6-5-84 | | 1988 |
| S 46 N | Howaldtswerke, Kiel | | | |
| S 47 N | Mazagon DY, Bombay | | | |

D: 1,660 tons surf./1,860 sub. S: 11/21.5 kts Dim: 64.40 × 6.50 × 5.50 A: 8/533-mm (fwd) - 14 torpedoes (tot.)

Electron Equipt: Radar:

Sonar: Krupp Atlas search and attack, Alcatel DUUX-5





S 44-India's first SSK-1500, on trials

J. Kürsener, 8-85

M: 4 MTU 12V493 TY60 diesels (600 hp each), 4/450-kw generators, 2 motors; 1 prop; 5,000 hp

Fuel: 118 tons Range: 13,000/0 (surf.); 8,200/8 (snorkel), 524/4 (sub.)

Man: 40 tot.

REMARKS: Final order, signed 11-12-81, includes an option to build 2 additional units in India. A variant of the Type 209 design. Will have Singer-Librascope SFCS Mk 1 weapons control system and the Gäbler spherical escape chamber. Indian-built units reported far behind schedule in mid-85, with little accomplished.

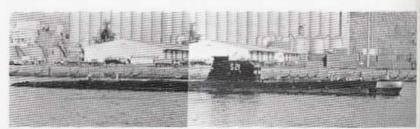
• 8 Soviet Foxtrot class

| | In serv. | | In serv. |
|---------------|----------|---------------|----------|
| S 20 KURSURA | 12-70 | S 40 Vela | 31-8-73 |
| S 21 KARANJ | 10-70 | S 41 VAGIR | 3-11-73 |
| S 22 KANDHERI | 1-69 | S 42 VAGLI | 10-8-74 |
| S 23 KALVARI | 16-7-68 | S 43 Vagsheer | 26-12-74 |



Vagli (S 42)

G. Arra, 1982



Karanj (S 21)

1983

D: 1,950/2,400 tons S: 16/15.5 kts Dim: 91.5 × 7.5 × 6.0 A: 10/533-mm TT (6 fwd, 4 aft) - 22 torpedoes or 44 mines Electron Equipt: Radar: 1/Snoop Tray

Sonar: 1/MF active, passive array M: 3 diesel generator sets (2,000 hp each), 3 motors; 3 props; 5,300 hp Range: 11,000/8 (snorkel) Endurance: 70 days Man: 8 officers, 70 men

CRUISERS

♦ 0 (+3) Soviet Kresta-II class

Remarks: Reportedly ordered 20-12-82. If new construction (rather than transfers from Soviet Navy inventory), will probably differ considerably from Soviet Navy units, due to the age of the Kresta-II design (mid-1960s). Since the Kresta-II building yard, Zhdanov Shipyard in Leningrad, is fully occupied with the Sovremennyy (a Kresta variant) and Udaloy programs, new Indian units would probably have to be built at 61 Kommuna Shipyard, Nikolayev. Because of the uncertainties surrounding the program, no characteristics data are given here; see U.S.S.R. section for Kresta-II. Former Royal Navy cruiser Mysore (ex-Nigeria) stricken 29-8-85.

GUIDED-MISSILE DESTROYERS

♦ 0 (+6) Project 15 class Bldr: . . .

D: 4,500-5,000 tons (fl) S: . . . Dim: . . . × . . . × . . .

A: . . ./. . . SSM — . . ./. . . SAM

Electron Equipt: Radar: . . . Sonar: . . .

M: CODOG

Remarks: A planned follow-on to the Godavari class, with Soviet ordnance, sensors, and propulsion equipment.

♦ 3 (+3) Soviet Kashin class Bldr: 61 Kommuna SY, Nikolayev

D: 3,950 tons (4,950 fl) S: 36-39 kts Dim: 147.0 × 15.8 × 5.0 (hull)

A: 4/SS-N-2C SSM (I \times 4) — 2/SA-N-1 SAM syst. (II \times 2; 44 Goa Missiles) — 2/76.2-mm DP (II \times 1) — 8/30-mm AA (II \times 4) — 5/533-mm TT (V \times 1) — 2/RBU 6000 ASW RL (XII \times 2) — 1/Ka-25 Hormone-A ASW helicopter

Electron Equipt: Radar: 2/Don Kay, 1/Big Net, 1/Head Net C, 2/Peel Group, 1/Owl Screech, 2/Drum Tilt

IFF: 2/High Pole B transponders

Sonar: 1/hull-mounted med. freq., 1/med. freq. VDS EW: 2/Watch Dog, 2 Top Hat A, 2 Top Hat B, 4/chaff RL (XVI × 4)

M: 4 gas turbines; 2 props; 94,000 hp Range: 1,500/35; 4,000/20 Man: 35 officers, 330 men

Remarks: New construction units, not conversions from former Soviet Navy units. In contrast to Soviet Navy "Modified Kashins," the SS-N-2C missiles are mounted forward and fire forward, while the after twin 76.2-mm gunmount has been omitted in favor of a hangar for the helicopter, reached by an inclined elevator/ramp. Have twin 30-mm vice 30-mm gatling guns. Program for first three was far behind delivery schedule; 3 more reported ordered 20-12-82.



Rajput (D 51)

1983



Rana (D 52)

L. & L. Van Ginderen, 6-82



Ranjit (D 53)

French Navy, 12-84

FRIGATES

F. . . GOMATI

 ♦ 2 (+1) Godavari class
 Bldr: Mazagon Docks, Bombay

 Laid down
 L
 In serv.

 F 51 Godavari
 2-6-78
 15-5-80
 10-12-83

 F. . . Ganga
 1980
 15-11-81
 . . . -85



20-3-84

Godavari (F 51)

198

D: 3,500 tons (4,100 fl) S: 27 kts Dim: 126.4 (123.6 pp) \times 14.5 \times 4.5 (hull) A: 4/SS-N-2C SSM (I \times 4) — 1/SA-N-4 SAM syst. (II \times 1; 20 Gecko missiles) — 2/57-mm DP (II \times 1) — 8/30-mm AA (II \times 4) — 6/324-mm ASW TT (III \times 2; A 184 torpedoes) — 1/Sea King ASW helicopter

Electron Equipt: Radar: 1/navigational, 1/Head Net C, 1/DA-08, 1/Pop Group, 2/Drum Tilt, 1/Muff Cob

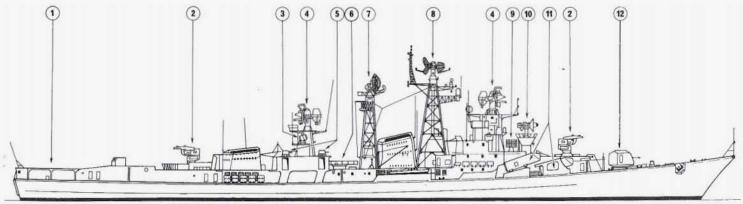
Sonar: 1 U.K. Type 184 -- EW: . . .

M: 2 sets GT; 2 five-bladed props; 30,000 hp Range: 4,500/12

Boilers: 2 Babcock & Wilcox, 3-drum; 38.7 kg/cm², 450°C

Man: 51 officers, 262 men

Remarks: Design derived from the *Leander* class, with the same propulsion plant but larger hull. Electronics and weapons systems a very diverse selection of Western



Rajput 1. Helicopter facility 2. SA-N-1 systems 3. Drum Tilt radar GFCS 4. Peel Group radar 5. Twin 30-mm AA guns 6. Torpedo tubes (V×1) 7. Big Net radar 8. Head Net-C radar 9. RBU 6000 ASW RL 10. Owl Screech radar GFCS 11. SS-N-2C SSM 12. 76.2-mm DP (II×1)

FRIGATES (continued)

F 41 TARAGIRI

F 42 VINDHYAGIRI

European and Soviet systems. The hangar has space for a second helicopter. Have Bear Trap helicopter landing and deck traversing system. The Selenia IPN-10 combat data system is fitted.

| • 6 British Lean | nder class | Bldr: Mazag | on Docks, Bombay | |
|------------------|------------|-------------|------------------|--|
| | Laid down | L | In serv. | |
| F 33 Nilgiri | 10-66 | 23-10-68 | 3-6-72 | |
| F 34 HIMGIRI | 1967 | 6-5-70 | 23-11-74 | |
| F 35 UDAYGIRI | 14-9-70 | 24-10-72 | 18-2-76 | |
| F 36 DUNAGIRI | 1-73 | 9-3-74 | 5-5-77 | |
| F 41 TARAGIRI | 1974 | 25-10-76 | 16-5-80 | |

1976



12-11-77

8-7-81

Udaygiri (F 35)

G. Gyssels, 1977



Vindhyagiri (F 42)

1984

D: 2,250 tons (2,800 fl); later units: 3,250 tons (fl) S: 30 kts

Dim: 113.38 × 13.1 × 4.27 (avg.)

A: 2/114-mm DP (II × 1) - F 33: 1/Sea Cat GWS 22; Others; 2/Sea Cat with M-4 directors — 1/Limbo Mk 10 ASW mortar (not on F 41 and F 42, which have 1/375-mm Bofors ASW RL (II \times 1)) — 2/20-mm AA (I \times 2) — 1 Alouette-III ASW helicopter (Sea King on F 41 and F 42) -F 41, 42: 6/324mm ILAS-3 ASW TT (III × 2; A 184 torpedoes)

Electron Equipt: Radar: F 33: 1/965, 1/993, 1/978, 2/903

F 34 on: 1/Decca navigational, 1/ZW-06, 1/LW-08, 1/M 44, 2/M 45

Sonar: 1/184 plus 1/199 VDS on F 33 and F 34; F 41, 42: Thomson-CSF hull-mounted

M: 2 sets GT; 2 five-bladed props; 30,000 hp Electric: 2,500 kw

Boilers: 2 Babcock & Wilcox, 3-drum; 38.7 kg/cm2, 450°C Fuel: 500 tons Range: Approx. 4,500/12

Remarks: The first two are very similar to British versions of the Leander class, but later units have been progressively improved, using H.S.A. radars and an ever-greater proportion of Indian-built components. F 41 and F 42 have very large telescoping hangars situated much nearer the stern and requiring removal of the three-barreled Limbo ASW mortar (replaced by a twin Bofors ASW RL on the forecastle); the new hangar holds a Westland Sea King ASW helicopter, and the flight deck incorporates Canadian Bear Trap haul-down gear. F 41 and F 42 also have openings in the hull sides beneath the helicopter deck at the stern. F 33 and F 34 received Type 199 variabledepth sonar; later units did not. The single Sea Cat quadruple SAM launcher in the F 33 has one MRS-3 director; later ships have two Dutch M-4 directors (with M-45 radar). F 41 and F 42 may receive SS-N-2 missiles, but are already overloaded. Later units have Decca-Racal Cutlass EW gear. All have Graseby G1738 towed torpedo decoys. F 33-36 are receiving U.S. Westinghouse sonar equipment (including VDS) in place of their original British equipment.

* 3 British Leopard (Type 41) class

| | Bldr | Laid down | L | In serv. |
|----------------------------------|---------------------|-----------|---------|----------|
| F 31 Brahmaputra (ex-Panther) | J. Brown, Clydebank | 1956 | 15-3-57 | 28-3-58 |
| F 37 BEAS | Vickers-Armstrong | 1957 | 9-10-58 | 24-5-60 |
| F 38 Betwa | Vickers-Armstrong | 1957 | 15-9-59 | 8-12-60 |



Brahmaputra (F 31)

French Navy, 4-85

D: 2,250 tons (2,515 fl) S: 25 kts

Dim: $103.63 (100.58 \text{ pp}) \times 12.19 \times 4.80 \text{ (hull)}$

A: 2/114-mm DP Mk 6 (II × 1) -2/40-mm AA Mk 5 (II × 1) -1/Squid ASW mortar (III × 1)

Electron Equipt: Radar: 1/293, 1/978, 1/275 Sonar: 1/177, 1/162, 1/174B

M: 8 Admiralty 16 VVS ASR1 diesels; 2 props; 12,380 hp Electric: 1,200 kw Range: 7,500/15 Man: 240 tot.

REMARKS: Beginning in 1978 with F 31, all have had their after 114-mm twin gunmounts replaced by an accommodations deckhouse to act as Cadet Training Ships. F 37 was modernized during 1980, F 38 in 1981. The 40-mm radar GFCS was removed.

2 British Whitby class

| | Bldr | Laid down | L | In serv. |
|--------------|-----------------|-----------|---------|----------|
| F 40 TALWAR | Cammell Laird | 1957 | 18-7-58 | 4-60 |
| F 43 Trishul | Harland & Wolff | 1957 | 18-6-58 | 1-60 |

D: 2,144 tons (2,560 fl) S: 30 kts Dim: 112.7 × 12.5 × 5.4 (over sonar) A: 3/SS-N-2 Styx SSM (I × 3) - 2/40-mm AA (I × 2) - 6/324-mm ILAS-3 ASW TT (III × 2)-1/Sea King helicopter

Electron Equipt: Radar: 1/293, 1/277, 1/978, 1/Square Tie Sonar: 1/177, 1/174B, 1/162

M: 2 sets GT; 2 props; 30,000 hp Electric: 1,140 kw Boilers: 2 Babcock & Wilcox; 38.7 kg/cm², 450°C Fuel: 370 tons

Range: 4,500/12 Man: 11 officers, 220 men

REMARKS: Three SS-N-2 Styx launchers - removed from Osa-I-class, guided-missile patrol boats - replaced the twin 114-mm Mk 6 gunmount in these two ships. Soviet Square Tie radar associated with Styx replaced the gun director, atop the pilothouse. F 40 further refitted 1982-83 at Mazagon Dockyard, Bombay, with telescoping hangars and Canadian Bear Trap haul-down system at the expense of the two Limbo ASW mortars; modernization of F 43 reported delayed by yard problems, 7-85.

CORVETTES

• 0 (+4) new construction Bldr: Mazagon Dock, Bombay

| | Laid down | L | In serv. | | Laid down | L | In serv. |
|-----|-----------|---|----------|-----|-----------|---|----------|
| | | | | K N | | | |
| K N | | | | K N | * * * | | 4.4.4 |

D: 1,200 tons (fl) S: 27 kts Dim: . . . ×

A: . . . Electron Equipt: Radar: . . . Sonar: .

M: 2 SEMT-Pielstick 18PA6 diesels; 2 CP props; 14,000 hp

Remarks: Ordered 12-83 to an indigenous design. No further information released.

• 0 (+5 or 6) Soviet Tarantul-I class Bldr: . . .

D: 480 tons (580 fl) S: 36 kts Dim: 56.5 × 10.5 × 2.5

A: 4/SS-N-2C SSM (II \times 2) — 1/76.2-mm DP — 1/SA-N-5 SAM syst. (IV \times 1; . . . Grail missiles) — 2/30-mm gatling AA (I \times 2)

Electron Equipt: Radar: 1/Krivach nav., 1/Bass Tilt, 1/Plank Shave

EW: . . . — IFF: 1/High Pole, 1/Square Head

M: CODOG or COGOG: 2 NK-12MV gas turbines (12,000 hp each) two cruise gas turbines or diesels (3-4,000 hp each); 2 props

Range: . . . Man: . .

REMARKS: Ordered 1984 for delivery 1986-89. Uncertain whether will be built in U.S.S.R. or in India under license; early delivery date indicates at least first unit will be Soviet-built. Probably intended to replace obsolete Osa-I and II-class missile boats.

Bldr: Petrovskiy SY, Leningrad ♦ 3 (+3?) Soviet Nanuchka II class

K 73 Hosdurg (In serv. 1-78) K 71 Vijaydurg (In serv. 12-76)

K 72 SINDHURDURG (In serv. 5-77)

D: 770 tons (fl) S: 32 kts Dim: 59.3 × 12.6 × 2.4

A: 4/SS-N-2C (II × 2) — 1/SA-N-4 system — 2/57-mm AA (II × 1)

CORVETTES (continued)



Sindhurdurg (K 72)

4-79

Electron Equipt: Radar: 1/Square Tie, 1/Pop Group, 1/Muff Cob, 1/Don-2 IFF: 2/Square Head, 1/High Pole EW: passive syst., 2 chaff RL (XVI × 2)

M: 3 Type M507 twin diesels; 3 props; 30,000 hp Range: 900/30; 2,500/12 Man: 60 tot.

Remarks: Arrived in India 3-77, 8-77, and 3-78. Three or more additional units were reportedly ordered 20-12-82, but no deliveries had occurred as of 7-85. Poor sea boats. The "Band Stand" radome covers a Square Tie antenna in these export units. The diesels each are composed of two coupled M504 diesel engines.

• 10 Soviet Petya-II class

I class Bldr: U.S.S.R.

P 68 Arnala P 74 Andaman P 69 Androth P 75 Amini

ANDAMAN P 78 KADMATH

P 78 KADMATH P 80 KAVARATTI P 79 KILTAN P 81 KATCHAL

P 73 Anjadip P 77 Kamorta



Andaman (P 74)

G. Arra, 1982

D: 950 tons (1,150 fl) **S:** 29 kts **Dim:** 81.8 (78.0 pp) \times 9.2 \times 2.9 (hull) **A:** 4/76.2-mm DP (II \times 2) - 4/RBU-2500 ASW RL (XVI \times 4) - 3/533-mm TT

 $(III \times 1) - 2/d.c.$ racks -2/mine rails

Electron Equipt: Radar: 1/Don-2, 1/Slim Net, 1/Hawk Screech Sonar: 1 Hercules med. freq.

M: CODOG: 1 Type IV3 diesel (6,000 hp), 2 gas turbines (15,000 hp each); 3 props; 36,000 hp

Range: 450/29; 4,800/10 Man: 98 tot.

Remarks: Transferred in 1969, 1972, and 1975. Were new-construction, export-version ships.

GUIDED-MISSILE PATROL BOATS

* 8 Soviet Osa-II class

K 90 Prachand K 92 Prabal K 94 Chamak K 96 Chapak K 91 Pralaya K 93 Pratap K 95 Chapal K 97 Charag

D: 215 tons (240 ft) **S:** 35 kts **Dim:** 38.6 × 7.6 × 2.0 **A:** 4/SS-N-2B Styx (I × 4) −4/30-mm AA (II × 2) **Electron Equipt:** Radar: 1/Square Tie, 1/Drum Tilt

IFF: 2/Square Head, 1/Head Pole B
M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: To be equipped with modern EW system. First four in service 17-2-76, second four on 5-11-76.

• 6 Soviet Osa-I class (In serv. 1971)

K 82 VEER K 85 VINASH K 88 NIRBHIK K 83 VIDYUT K 86 NIPAT K 89 NIRGHAT

D: 180 tons (215 ft) S: 36 kts Dim: 38.6 × 7.6 × 1.8 A: 4/SS-N-2A Styx (I × 4) — 4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole B

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Transferred 1971. Vijeta (K 84) and Nashat (K 87) had their missile tubes removed and three from each placed on the frigates Talwar (F 40) and Trishul (F 43). Both, however, remain in service as patrol boats.

PATROL BOATS

• 4 (+3) SDB Mk 3 class

| | Bldr | Laid down | L | In serv. |
|-------|------------------------|-----------|----------|----------|
| T58 N | Garden Reach, Calcutta | 17-2-83 | 20-12-83 | 1984 |
| T N | Garden Reach, Calcutta | 24-3-83 | 20-3-84 | 1984 |
| T N | Goa SY | | 17-1-84 | 10-84 |
| T N | Garden Reach, Calcutta | | | 1985 |
| T N | Garden Reach, Calcutta | | 1.4.4 | |
| T N | Goa SY | 4.14.14 | | |
| T N | Goa SY | | | |

D: 210 tons (fl) S: 34 kts Dim: 37.80 × . . . × 1.30 (hull)

A: 1/40-mm AA -. . .

Electron Equipt: Radar: 1/. . . nav.—Sonar: . . . M: 2 MTU diesels; 2 props; 9,200 hp Man: 34 tot.

Remarks: Intended as an improved version of the SDB Mk 2 with better hull form, less rake to propeller shafts. Probably also have a centerline cruise engine. Speed also reported as 28 kts for Goa-built units.

♦ 5 SDB Mk 2 class Bldr: Garden Reach SB & Eng., Calcutta

| | L | In serv. | | L | In serv. |
|--------|----------|----------|----------------|---------|----------|
| T 51 N | 31-12-75 | 17-11-78 | T 56 RAJTARANG | 2-81 | 1984 |
| T 52 N | | 3-9-77 | T 57 RAJSHREE | 27-5-83 | 1984 |
| T 53 N | | 12-4-78 | | | |

D: 160 tons (203 fl) S: 29 kts Dim: 37.50 × 7.50 × 1.75

A: 1/40-mm CT AA - 2/d.c. racks (18 Mk 7 d.c.)

M: 2 Deltic (6 kts) 18-42K diesels; 2 props; 6,240 hp; 1 Kirloskar Cummins NH-220 cruise diesel, 165 hp

Electric: 220 kVA Range: 1,400/14 Man: 4 officers, 26 men

• 2 Soviet OSA-I class (In serv. 1971)

. . . Vijeta (ex-K 84) . . . Nashat (ex-K 87)

Remarks: Missile tubes removed, as noted above, Nashat was converted to carry frog-

MINE WARFARE SHIPS

• 6 (+6) Soviet Natya class

M 61 PONDICHERY M 63 BEDI M 65 ALLEPPY M 62 PORBANDAR M 64 BHAVNAGAR M 66 RATNAGIRI



Pondichery (M 61)

1978

D: 650 tons (750 fl) S: 18 kts Dim: 61.0 × 9.8 × 3.0

A: 4/30-mm AA (II \times 2) — 4/25-mm AA (II \times 2) — 2/RBU-1200 ASW RL (V \times 2) — mines

Electron Equipt: Radar: 1/Don-2, 1/Drum Tilt—Sonar: 1/HF hull-mounted IFF: 2/Square Head, 1/High Pole B

M: 2 diesels; 2 props; 5,000 hp Range: 1,800/16; 5,200/10 Man: 80 tot.

Remarks: Two transferred in 1978, two in 1979, and two in 1980. Differ from the units in the Soviet Navy in that they do not have a ramp at the stern. Can be used as ASW escorts. Six additional units reportedly ordered 20-17-82. Aluminum/steel alloy construction.

6 Soviet Yevgenya-class inshore minesweepers (First 3 in serv. 15-5-83, others: 2-84)

M 83 Mahe M 85 Mangalore M 87 Mulki M 84 Malwan M 86 Malpe M 88 Magdala

D: 80 tons (90 fl) S: 11 kts Dim: 26.2 × 6.1 × 1.5

A: 2/14.5-mm mg (II × 1) Man: 10 tot. M: 2 diesels; 2 props; 600 hp Electron Equipt: Radar: 1/Spin Trough Range: 300/10

Remarks: Glass-reinforced plastic construction. Equipped for shallow-water minehunting with a towed television and marker-buoy dispenser.

4 British "Ham"-class inshore minesweepers

| | Bldr | L |
|----------------------------------|--------------------------|---------|
| M 79 BIMLIPATHAM (ex-Hildersham) | Vosper, Portsmouth | 5-2-54 |
| M 80 Bassein (ex-Littleham) | Brooke Marine, Lowestoft | 4-5-54 |
| M 81 BHATKAL | Mazagon Docks, Bombay | 5-67 |
| M 82 Bulsar | Mazagon Docks, Bombay | 17-5-69 |

MINE WARFARE SHIPS (continued)



Bhatkal (M 81) - old pendant number

1968

D: 120 tons (159 fl) S: 14 kts (9, sweeping)

Dim: 32.43 (30.48 pp) × 6.45 × 1.7 A: 1/20-mm AA Electron Equipt: Radar: 1/978 Man: 2 officers, 13 men M: 2 Paxman YHAXM diesels; 2 props; 1,000 hp Fuel: 25 tons

Remarks: M 79 and M 80 were transferred in 1955. The Indian-built units have teakwood hulls but are otherwise almost identical.

AMPHIBIOUS WARFARE SHIPS

♦ 1 tank landing ship Bldr: Garden Reach Dockyard, Calcutta

Laid down L In serv.

D: 5,500 tons (fl) S: . . . Dim: . . . × . . . × . . .

A: . . . Electron Equipt: Radar: . . . M: 2 SEMT-Pielstick diesels; 2 props; 8,560 hp

Range: . . . Man: . . .

Remarks: Has bow doors and a helicopter deck aft. Additional units may be constructed to continue the expansion of Indian power-projection forces.

♦ 6 (+2) Soviet Polnocny-C class Bldr: Polnocny SY, Gdansk, Poland

L 14 GHORPAD L 15 KESARI L 16 SHARDUL L 17 SHARABH L 18 CHEETAH L 19 MAHISH L 20 N. . . L 21 N. . .



Cheetah (L 18)

French Navy, 12-84

D: 1,150 (fl) S: 18 kts Dim: 81.3 × 10.1 × 2.1

A: 4/30-mm AA (II × 2) - 2/140-mm rocket launchers (VIII × 2)

Electron Equipt: Radar: 1/Don-2 (Krivach in L 18)

M: 2 diesels; 2 props; 5,000 hp

Range: 900/17; 1,500/14 Man: 60 tot.

Remarks: L 14 transferred in 1975, L 17 in 1976, L 18 in 12-84, L 19 in 7-85, rest by end 1986. First four do not have a helicopter platform as on other export Polnocny-Cs. Cargo: 350 tons and up to 140 troops. *Mahish* delivered 7-85.

♦ 2 Soviet Polnocny-A class Bldr: Polnocny SY, Gdansk, Poland

L 13 GULDAR L 12 GHARIAL

D: 770 tons (fl) S: 19 kts Dim: 73.0 × 8.6 × 2.0

A: 2/25-mm AA (II \times 1) -2/140-mm rocket-launchers (XVIII \times 2)

Electron Equipt: Radar: 1/Don-2 M: 2 diesels; 2 props; 5,000 hp

Range: 900/18; 1,500/14 Man: 40 tot.

REMARKS: Transferred 1966. Cargo: 180 tons.

◆ 4 (+5) Vasco da Gama-class utility landing craft

| | Bldr | L | In serv. |
|--------------------|----------------------|----------|----------|
| L 34 Vasco Dá Gama | Goa SY, Goa | 29-11-78 | 28-1-80 |
| L 35 N | Hooghly DY, Calcutta | 16-3-80 | 17-12-83 |
| L 36 N | Goa SY, Goa | 13-1-79 | 1-12-80 |
| L 37 N | Hooghly DY, Calcutta | | |

D: 500 tons (fl) S: 9 kts Dim: 55.96 × 7.94 × 1.71 (aft)

A: 2/40-mm AA (I × 2) - mines

M: 3 Kirloskar-M.A.N. W8V 17.5/22 AMAL diesels; 3 Kort-nozzle props; 1,245 hp Range: 1,000/8

Remarks: Cargo: 250 tons or 120 men. Approval given to construct "five 150-man ferry craft" in 1985 probably indicates additional units of this class; third unit of second series launched 22-7-85.

HYDROGRAPHIC SURVEY SHIPS

♦ 3 (+2) Sandhayak class Bldr: Garden Reach SB & Engineers, Calcutta

| | | L | In serv. | | L | In serv. |
|---|-----------|----------|----------|-----|-----|----------|
| J | SANDHAYAK | 6-4-77 | 26-2-81 | J N | | |
| J | NIRDESHAK | 16-11-78 | 4-10-83 | J N | *** | |
| J | NIBIIPAK | 10-7-81 | 1985-86 | | | |

D: 1,200 tons (1,820 fl) **S:** 16.75 kts **Dim:** 85.77 (78.80 pp) \times 12.30 \times 3.34

A: 2/40-mm AA (I × 2) - 1/Alouette-III helicopter

Electron Equipt: Radar: 1/Decca TM-series navigational

M: 1 GRSE-M.A.N. G8V 30/45 ATL diesel; 1 prop; 3,920 hp (plus 1 Pleuger 200-hp active rudder; 5 kts)

Fuel: 264 tons Range: 6,000/14 Man: 12 officers, 134 men

Remarks: 2,050 grt. Telescoping hangar for one Alouette-III helicopter. Four inshore survey launches with "Hydrodist" fixing system. Have 3 precision depth-finders, Decca "Navigator," Decca "Hi-Fix," taut-wire measuring gear, and a gravimeter. Carry 169 tons water and 5 tons aviation fuel. Construction of 4th unit approved under 1985 Budget, and a sixth is planned.

♦ 1 hydrographic-survey ship

Bldr L In serv.
J 14 Darshak Hindustan SY, India 2-11-59 28-12-61



Darshak (J 14)

1974

D: 2,790 tons **S:** 16 kts **Dim:** $97.3 \times 14.94 \times 5.8$

A: 1/40-mm AA M: 2 diesels, electric drive; 2 props; 3,000 hp Man: 150 tot.

Remarks: Carries one Alouette-III helicopter.

◆ 4 inshore-survey ships
 Bldr: Goa SY, Vasco da Gama (In serv. 1984-85)
 J 33 N. J 34 N. J 35 N. J 36 N.

D: 185 S: 12.5 kts Dim: 37.5 × 7.5 × 1.75

M: Diesels Range: 1,500/12.5

Remarks: J 34 launched 28-5-83 and J 35 on 10-8-83. Steel-hulled. Same hulls as SDB Mk 2 patrol boat class.

♦ 2 Gaveshani-class small inshore-survey craft

J. . . GAVESHANI J. . . N.

REMARKS: Launched 2-76.

AUXILIARY SHIPS

♦ 1 Soviet Ugra-class submarine tender Bldr: U.S

Bldr: U.S.S.R. (In serv. 28-12-68)

A 54 AMBA



Amba (A 54)

1968

D: 6,750 tons (9,600 fl) S: 20 kts Dim: 145.0 × 17.7 × 6.4

A: 4/76.2-mm DP (II × 2)

Electron Equipt: Radar: 1/Don-2, 1/Slim Net, 2/Hawk Screech

M: 4 diesels; 2 props; 8,000 hp Range: 21,000/10

Remarks: Helicopter platform. Quarters for 750 men. Two 6-ton cranes, one 10-ton crane.

♦ 1 Soviet T 58-class submarine-rescue ship

A 55 NISTAR

D: 930 tons (fl) **S:** 17 kts **Dim:** $71.7 \times 9.1 \times 2.7$

Electron Equipt: Radar: 1/Don-2 M: 2 diesels; 2 props; 4,000 hp

Range: 2,500/12 Man: 60 tot.

AUXILIARY SHIPS (continued)

Remarks: Built during late 1950s, transferred 1971. Two rescue chambers, port and starboard sides of the stern. Decompression chamber, diving bells.

Note: Two new submarine rescue ships are programmed to be built in India.

♦ 1 repair ship Bldr: Foundation Maritime, Canada (L: 25-7-44)

A 52 DHARINI (ex-La Petite Hermine, ex-Ketowna Park)

D: 6,000 tons (fl) S: 9 kts Dim: 99.0 × 13.9 × 4.0

M: Triple-expansion reciprocating steam; 1 prop; 800 hp Fuel: 620 tons

Remarks: Sold to India for cargo use, 1953; in service in Indian Navy 5-60.

♦ 1 transport Bldr: Mazagon DY, Bombay

D: 1,800 grt S: 20 kts Dim: 74.0 (pp) × 14.4 × . . .

M: 2 diesels; 2 props; 8,000 hp

Remarks: Ordered 3-81. No other details available.

1 hospital ship Bldr: Hindustan SY, Calcutta

LAKSHADWEEP (L: 28-8-81)

. . . N.

D: . . . S: 12 kts Dim: 52.0 (46.8 pp) × 9.5 × 3.0

M: 2 diesels; 2 props; 900 hp

Man: 19 crew, plus 15 medical staff (90 hospital berths)

REMARKS: Laid down 2-81.

• 1 training ship Bldr: Mazagon DY, Bombay

Laid down L In serv.

D: . . . S: . . . Dim: 107 × . . . × . . . A: 4 . . . M: Diesels

Remarks: Ordered 1981. Intended to supplement the *Leopard* class. Carries approximately 120 cadets. Was to have completed 3-84, delayed by yard problems.

OILERS

Note: Construction of a new replenishment oiler was approved in the 1985 Budget.

• 2 Deepak class Bldr: Bremer Vulkan Schiffbau, Bremen-Vegesack, West Germany

A 50 Deepak (In serv. 20-11-72) A 57 Shakti (In serv. 21-2-76)



Shakti (A 57) - with hangar extended

1982

D: 6,785 tons (22,000 fl) S: 20 kts Dim: 168.43 (157.50 pp) × 23.0 × 9.14 A: 3/40-mm AA (I × 3) — 2/20-mm AA (I × 2) M: 1 set GT; 1 prop; 16,500 hp Boilers: 2 Babcock & Wilcox Range: 5,500/18.5 Man: 169 tot.

REMARKS: 12,690 grt/15,800 dwt. Two liquid-replenishment stations per side, with British-style rigs. Telescoping hangar and flight deck for one helicopter. Carry 12,624 tons fuel oil, 1,280 tons diesel fuel, 1,495 tons aviation fuel, 812 tons fresh water, and some dry cargo.

• 1 former merchant tanker Bldr: Japan (In serv. 1959)

DESH DEEP

D: 16,400 tons (fl)
 S: 13 kts
 Dim: 145.0 (135.0 pp) × 19.5 × 7.8
 M: 2 Sulzer 6-cyl. diesels; 2 props; 8,200 hp
 Electric: 320 kw
 Fuel: 1,056 tons
 Range: 23,000/13
 Man: . . . tot.

Remarks: 8,324 grt, 12,177 dwt. Taken over 1972 and operated as a freighting tanker. Cargo: 11,800 tons (100,048 m³).

TUGS

♦ 2 Gaj-class oceangoing tugs Bldr: Garden Reach SB & Eng., Calcutta

A 51 Gaj (In serv. 20-9-73) A. . . Matanga (L: 29-10-77; in serv. 1983)

D: 1,465 tons (1,600 fl) S: 15 kts Dim: 66.0 (60.0 pp) × 11.6 × 4.0 A: None M: 2 GRSE-M.A.N. G7V diesels; 2 CP props; 3,292 hp Range: 8,000/12

Remarks: Fitted for salvage work. 40-ton bollard pull. Matanga reported as 62.0 m overall by 12.3 beam, 3,920 hp.



Gaj (A 51)

1977

YARD AND SERVICE CRAFT

♦ 1 fuel lighter Bldr: Rajabagan SY, Bombay

Poshak (In serv. 4-82)

D: 600 tons S: 8 kts Dim: 36.3 × 7.6 × 2.4 M: 1 M.A.N. diesel; 255 hp Cargo: 200 tons dwt.

♦ 2 fuel lighters Bldr: Rajabagan Yd., Bombay

Purak (In serv. 3-6-77) Pradhayak (In serv. 2-78)

D: 960 tons (fl) S: 9 kts Dim: 49.7 × 8.1 × 3.0 M: 1 diesel; 1 prop; 560 hp Cargo: 376 tons dwt.

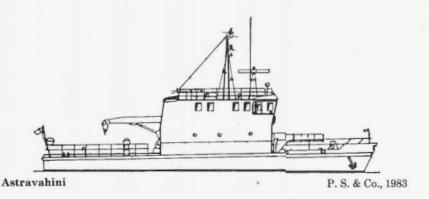
3 water lighters Bldr: 1 by Rajabagan, Bombay; others: Mazagon DY, Bombay

D: 200 tons S: 9 kts Dim: 32.0 × . . . × 2.4 M: 1 diesel; 1 prop; . . . hp

◆ 1 torpedo trials and retrieval craft Bldr:

Bldr: P.S. & Co., Bombay

A 71 ASTRAVAHINI (In serv. 8-9-83)



REMARKS: No details available.

♦ 2 torpedo retrievers Bldr: Goa SY

A 71 N. (In serv. 16-9-82) A 72 N. (L; 5-11-80)

D: 110 tons (fl) S: 11 kts Dim: 28.5 × 6.1 × 1.4 M: 1 Kirlasker-M.A.N. 12-cyl. diesel; 1 prop; 300 hp

♦ 3 diving tenders Bldr: Cleback SY (In serv. 1979, 2-84, 8-84)
 D: 36 tons (fl) S: 12 kts Dim: 14.89 (13.37 pp) × 4.40 × 1.21
 M: 2 Premier Auto-Meadows diesels; 2 props; 130 hp Fuel: 2 tons

• 1 coastal tug Bldr: Garden Reach S.B. & Eng., Calcutta

Rajaji (In serv. 7-82)

AJARAL ARJUN BALSHIL

D: 428 tons S: 12.5 kts Dim: 30.5 × 9.5 × 3.8

M: 2 Garden Reach-M.A.N. diesels; 2 Kort-nozzle props; 2,120 hp

Note: Construction of four new tugs was authorized under the 1985 Budget.

♦ 3 large harbor tugs Bldr: Mazagon Dock, Bombay (In serv. 1973-74)

♦ 1 sail-training craft Bldr: Alcock Ashdown, Bhavnagar Varuna (In serv. 20-4-81) D: 130 tons (fl) Dim: 30.5 × . . . × . . .

INDIA (continued)

YARD AND SERVICE CRAFT (continued)

REMARKS: Two-masted brig for training Sea Cadets. Construction of a second sailtraining ship has been proposed; to carry 90 cadets.

Note: There are undoubtedly a large number of other yard and service craft, for which no names or data are available.

COAST GUARD

The Coast Guard was established 1-2-77 to ensure surveillance of India's 200-nautical-mile economic zone. Commanded by an admiral, it consisted initially of ships and craft transferred from the Indian Navy. The Indian Customs Service was merged with the Coast Guard in April 1982. The name "Coast Guard" is written in large black letters on the sides of ship hulls, which are painted white.

The Coast Guard has announced that in addition to the units listed below, it plans to acquire a salvage tug of 1,570 grt, a pollution-control ship, twelve patrol aircraft, and one search-and-rescue aircraft. During 1982, two Fokker F-27 Friendship transports were transferred from Indian Airlines for patrol duties, and three Chetak (Alouette-III) helicopters were ordered. Also in service are several Cessna 182 light aircraft. Seven or more HAL-built Dornier 228 surveillance aircraft are intended for the Coast Guard, which opened its first air station in 12-85.

Bldr: Mazagon DY, Bombay ♦ 3 (+3) Vikram class

| | Laid down | L | In serv. |
|-----------|-----------|---------|----------|
| 33 VIKRAM | 3-81 | 26-9-81 | 20-12-83 |
| 34 VISAYA | | | 13-4-84 |
| 35 VEERA | | 30-6-84 | 1-85 |
| 36 N | + + + | | |
| 37 N | | | |
| 38 N | | | |



Vikram (33)

Mazagon DY, 1983

D: 940 tons (1,100 fl) S: 22 kts Dim: 74.10 × 11.40 × 3.00 (3.48 props)

A: 1/40-mm AA-1/Chetak (Alouette-III) helicopter

Electron Equipt: Radar: 1/Decca 1230, 1/Decca . . .

M: 2 SEMT-Pielstick 16 PA6 V80 diesels; 2 CP props; 12,800 hp

Electric: 880 kw Fuel: 108 tons Range: 3,500/14

Man: 10 officers, 12 chief petty officers, 52 men

Remarks: First 3 ordered 1979; second three ordered 1983. Have fin stabilizers, hangar for Chetak (license-built Alouette-III) helicopter. Have pollution-control equipment, diving gear, and firefighting monitors.

◆ 2 British Blackwood class former ASW frigates

| | Bldr | Laid down | L | In serv. |
|-----------|------------------------|-----------|----------|----------|
| 31 KIRPAN | Alex. Stephen, Glasgow | 1957 | 19-8-58 | 7-59 |
| 32 KUTHAR | Samuel White, Cowes | 1957 | 14-10-58 | 1960 |



Kirpan (T 31) - in naval service

1969

D: 1,180 tons (1,456 fl) S: 23 kts Dim: 94.5 (91.44 pp) × 10.05 × 4.7

A: 3/40-mm AA (I \times 3)

Electron Equipt: Radar: 2/navigational—EW: Decca-Racal Cutlass intercept

M: 1 set GT; 1 prop; 15,000 hp Electric: 1,108 kw Boilers: 2 Babcock & Wilcox; 38.7 kg/cm²; 450°C Range: 4,500/12

REMARKS: Transferred to the Coast Guard 1-7-77. Sister Khukri sunk 9-12-71 by a Pakistani submarine. Sonars and two Mk 10 Limbo triple ASW mortars removed by 1983

PATROL BOATS

♦ 1 (+2) Japanese-design Reach SB & Eng., Calcutta Bldr: 64: Sumidagawa SY, Tokyo; others: Garden

64 Jija Bai (In serv. 20-6-83)

65 N. . . 66 N. . . 67. . .



Jija Bai (64)

Sumidigawa, 1983

D: 273 tons (fl) S: 25 kts (sust.) Dim: 44.00 × 7.40 × 1.50 (hull) A: 1/40-mm AA Electron Equipt: Radar: 1/nav. Man: 34 M: 2 MTU 12V538 TB82 diesels; 2 props; 4,030 hp Range: 2,375/14

Remarks: Same basic design as Philippine Coast Guard's Bessang Pass class. Two additional units authorized in 1985 Budget. The three listed as under construction were ordered in 1979 as Type 956, but may have been canceled and reordered to this design.

• 2 SDB Mk 2 class Bldr: Garden Reach SB & Eng., Calcutta

L In serv. In serv. 23-12-80 2-81 26-11-81

Remarks: For specifications, see SDB Mk 2 class in naval listings, page 241.

• 5 Soviet Poluchat-I class

51 Panaji 52 Panvel 53 Pamban 54 Puli 55 Pulicat

D: 80 tons (90 fl) S: 18 kts Dim: 29.57 × 6.1 × 1.9

A: 2/14.5-mm AA (II × 1) M: 2 M50 diesels; 2 props; 2,400 hp

Range: 460/17; 900/10 Man: 20 tot.

Remarks: Transferred 1967-69.

♦ 1 British "Ford" (SDB Mk 1) class

Bldr: Hooghly Docking & Eng., Cal-

cutta

735 Abhay (In serv. 13-11-61)

D: 120 tons (151 fl) S: 18 kts Dim: 35.76 × 6.1 × 1.7 A: 1/40-mm AA M: 2 Paxman YHAXM diesels; 2 props; 1,000 hp; 1 Foden FD-6 cruise diesel; 100 hp

Fuel: 23 tons Range: 500/12; 1,000/8 (cruise engine)

Remarks: Originally a class of six: two stricken, two to Bangladesh, one to Mauritius.

• 8 South Korean patrol craft Bldr: Swallow Craft, Pusan (In serv. 1983)

C01-C08

D: 32 tons (fl) S: 20 kts Dim: 20.0 × 4.7 × 1.3

A: 1/7.62-mm mg Electron Equipt: Radar: 1/nav.

M: 2 G.M. 12V71 TI diesels; 2 props; 1,060 hp Range: 500/20 Man: 8 tot.

Bldr: GRW, India . . . Norwegian SM-43 Smuggler-class launches

D: . . . S: 36 kts Dim: 13.4 × . . . × . . .

M: 2 Castoldi waterjets; . . . hp Man: 4 tot.

Remarks: Acquired when the Coast Guard merged with the Customs Service in 4-82. Glass-reinforced plastic construction. Original design by Båtservice, Mandal, Nor-

INDONESIA

Personnel (1984): 35,800, including 5,000 Marines

Merchant Marine (1984): 1,484 ships-1,856,967 grt (tankers: 162 ships-433,914 grt)

NAVAL AVIATION: The Indonesian Navy has a coastal-surveillance and logistic-support force consisting of 12 Australian N22B and 6 N22SL Searchmaster maritime surveillance aircraft, 6 C-47 Dakota transports, 3 Aero Commander light transports, and 4 CASA-212 light transports, plus 5 BO-105, 1 Alouette-III, and 10 Wasp (4 transferred 7-10-81, 6 somewhat later) helicopters. The first of 25 Nuritanio-built AS-332 Puma (NAS 132) helicopters was delivered 29-12-84, with all to deliver by 12-84; some may be fitted with AS.39 Exocet anti-ship missiles. Four older Bell Model 476 helicopters were re-engined with turbines in 1984-85. Planned is a "Naval Combat Element" of 12

NAVAL AVIATION (continued)

Northrop F-5E "Tiger-II" jet fighters. The Air Force has 2 Boeing 737 Surveiller long-range maritime patrol aircraft (first delivered 6-83) with "Slammer" side-looking radar; a third is to convert by 1987. Also used are several C-130 HMP in a surveillance role.

Warships In Service Or Under Construction As Of 1 January 1986

| | L | Tons (Surfaced) | Main armament |
|-------------------------|---------|--------------------|--|
| • 3 submarines | | | |
| 2 Type 209 | 1980 | 980 | 8/533-mm TT |
| 1 Whiskey | 1958 | 1,050 Tons | 6/533-mm TT |
| ♦ 11 (+1) frigates | | | |
| 1 (+1) Training Frigate | 1980 | 1,850 | 4/Exocet, 1/57-mm DP |
| 3 Fatahilah | 1977-79 | 1,160 | 4/Exocet, 1/120-mm DP, 1/40-mm |
| 3 Tribal | 1960-62 | 2,300 | 2/114 mm DP, 2/Sea Cat, ASW weapons |
| 4 Claud Jones | 1958-59 | 1,450 | 1 or 2/76-mm, 6/Mk 32 TT |

- * 4 guided-missile patrol boats
- ♦ 22 (+. . .) patrol boats
- ◆ 2 (+2) minesweepers
- ♦ 11 amphibious-warfare ships

Note: The names of Indonesian ships are preceded by the designation KRI (Kapalperang Republik Indonesia, or Warship of the Republic of Indonesia).

SUBMARINES

| ♦ 2 West German Type 209 | Bldr: Howaldtswerke, Kiel | | | |
|------------------------------|---------------------------|---------|----------|--|
| | Laid down | L | In serv. | |
| 401 Cakra | 25-11-77 | 10-9-80 | 18-3-81 | |
| 402 Nangala II (ex-Candrasa) | 14-3-78 | 10-9-80 | 6-7-81 | |



Nangala II (402)

G. Gyssels, 1981

D: 980/1,150/1,440 tons S: 11 (snorkel)/21.5 kts

Dim: 61.00 × 6.20 × 5.50 A: 8/533-mm TT (fwd) - 14 total torpedoes

Electron Equipt: Radar: 1/Thompson-CSF Calypso

Sonar: 1/Atlas AN 526 passive, 1/CSU AN 407 A9 passive, DUUX-2

M: 4 MTU 12V493AZ diesels (600 hp each), 2 electric motors; 1 prop; 5,000 hp

Range: 16/21.5; 25/20; 230/8; 400/4-8,200/11 (snorkel)

Man: 6 officers, 28 men

Remarks: Ordered 2-4-77. Can dive to 250 m. H.S.A. Sinbads weapons control. Ordering of a third has been postponed.

1 Soviet Whiskey class

410 PASOPATI



Pasopati (410)

1976

D: 1,050/1,350 tons **S:** 17/16 kts **Dim:** $76.0 \times 6.3 \times 5.0$ A: 6/533-mm TT (4 fwd, 2 aft) - 14 torpedoes or 28 mines M: 2 diesels (4,000 hp), electric drive; 2 props; 2,500 hp Endurance: 40 to 45 days Range: 6,000/5 (snorkel) Man: 60 tot. Remarks: Sister Bramastra (412) stricken 1981, along with Nagabanda (403), which had been used for dockside training. Pasopati has been given new batteries and was refitted for further service in 1984; now used mainly for dockside training.

FRIGATES

Note: Indonesia was offered the opportunity to purchase four Royal Netherlands Navy Van Speijk-class frigates in 5-85.

| • 1 (+1) training | frigates | Bldr: Uljanic | SY, Yugoslavi |
|-----------------------|-----------|---------------|---------------|
| | Laid down | L | In serv. |
| Hajer Dewartara N. | 11-5-79 | 11-10-80 | 20-8-81 |



Hajer Dewartara (364)

10-81

D: 1,850 tons (fl) **S:** 27 kts **Dim:** 96.70 (92.00 wl) \times 11.20 \times 3.55

A: 4/MM 38 Exocet SSM (II × 2) − 1/57-mm Bofors − 2.20-mm AA (I × 2) − 2/ASW TT (2/SUT wire-guided torpedoes) - mines - 1 BO-105 helicopter

Electron Equipt: Radar: 1/Decca 1229, 1/H.S.A. WM-28

Sonar: PHS-32

EW: SUSIE-I system -2/128-mm flare RL (II × 2)

M: CODOG: 1 Rolls-Royce Olympus TM-3B gas turbine, 27,250 hp; 2 MTU 16V956 TP91 diesels, 7,000 hp; 2 CP props

Fuel: 338 tons Range: 1,150/27 (gas turbine); 4,000/20 (diesels) Man: 92 crew + 100 students

REMARKS: Same basic design as ship laid down in 1977 for Iraq. Ordered 14-3-78. A second was reportedly ordered 7-83. SEWACO GM 101-41 computerized data system. Fin stabilizers, 114 tons water ballast, 50 tons potable water, 7 tons helo fuel. Carries two LCVP-type landing craft. 1,000 rounds 57-mm, 3,120 rounds 20-mm ammunition. Gas turbine rated at 22,300 hp in tropics. WM-28 track-white-scan fire-control radar not fitted at time of delivery.

• 3 Fatahilah class Bldr: Wilton-Fijenoord, Schiedam, The Netherlands

| | Laid down | L | In serv. |
|----------------|-----------|----------|----------|
| 361 FATAHILAH | 31-1-77 | 22-12-77 | 16-7-79 |
| 362 Malahayati | 28-7-77 | 19-6-78 | 21-3-80 |
| 363 Nala | 27-1-78 | 11-1-79 | 8-80 |



Malahayati (362)

R. Gillett, 11-84



Nala (363) - with hangar in folded state

FRIGATES (continued)



Malahayati (362)

R. Gillett, 11-84

D: 1,160 tons (1,450 fl) S: 30 kts (21 diesel) Dim: $83.85 \times 11.10 \times 3.30$ A: 361, 362: 4/MM 38 Exocet SSM (II × 2) — 1/120-mm Bofors L-46 DP — 1/40-mm Bofors L-70 — 2/20-mm AA (I × 2) — 2/375-mm Bofors SR-375A ASW RL (II × 1) — 6/324-mm Mk 32 ASW TT (III × 2); 363: 4/MM 38 Exocet (II × 2) — 1/120-mm Bofors L-46 DP — 2/40-mm AA (I × 2) — 2/20-mm AA (I × 2) — 1/BO 105 helicopter

Electron Equipt: Radar: 1/Decca AC 1229, 1/DA-05/2, 1/WM-28 Sonar: PHS-32

EW: SUSIE-I syst. - 2/Knebworth/Corvus chaff RL

M: CODOG: 1 Rolls-Royce Olympus TM-3B gas turbine, 22,360 hp (tropical); 2 MTU 16V956 TB81 diesels; 800 hp; 2 CP props

Electric: 1,350 kw Range: 4,250/16 (diesels)

Man: 11 officers, 71 men

Remarks: Ordered 8-75. The Nala has a new type of helicopter deck that folds around the helicopter to form a hangar, two single 40-mm AA instead of one, and ASW torpedo tubes. DAISY computerized data system. Have an NBC warfare citadel. Living spaces air-conditioned. Fin stabilizers. Ammunition supply: 400 rounds 120-mm, 3,000 rounds 40-mm, 12 ASW torpedoes, 54 Nelli and Erica ASW rockets, 50 rounds chaff. The GFCS has a LIROD t.v./laser/infrared backup director.

♦ 3 ex-U.K. "Tribal" class

| | Bldr | Laid down | L | In serv. |
|--|-----------------------------|-----------|---------|----------|
| 331 Martha Khristina Tiyahahu (ex-Zulu, F 124) | Alex. Stephens & Sons | 13-12-60 | 3-7-62 | 17-4-64 |
| 332 WILHELMUS ZAKARIAS | Thornycroft, | 3-11-58 | 11-7-60 | 13-2-63 |
| YOHANNES (ex-Gurkha, F 122) 333 HASANUDDIN (ex-Tartar, F 133) | Woolston HMDY, Devonport | 22-10-59 | 19-9-60 | 26-2-62 |



Martha Khristina Tiyahahu (331)

L. & L. Van Ginderen, 4-85



Martha Khristina Tiyahahu (331)

G. Gyssels, 5-85

D: 2,300 tons (2,700 fl) S: 24 kts Dim: 109.73 (106.68 pp) × 12.95 × 3.80 (5.30 props)

A: 2/114-mm Mk 5 DP (I×2)—2/Sea Cat GWS.21 syst. (IV×2, 2 directors)—2/20-mm AA (I×2)—1/Limbo Mk 10 ASW mortar (III×2)—1/Wasp helicopter (AS.12 ASM, Mk 44/46 torpedoes)

Electron Equipt: Radar: 1/978, 1/993, 1/965, 1/903, 2/262

Sonar: Type 170B, Type 177, Type 162

EW: intercept equipt., 2/Knebworth/Corvus chaff RL

(VIII × 2)

M: COSAG: 1 set Metrovik GT (15,000 hp) and 1 A.E.I. gas turbine (7,500 hp); 1/5-bladed prop; 22,500 hp

Boilers: 1 Babcock & Wilcox 3-drum; 38.7 kg/cm2, 450°C

Electric: 1,450 kw Fuel: 400 tons Range: 5,300/12

Man: 13 officers, 240 men (in RN service)

Remarks: Survivors of a class of seven Royal Navy "General-Purpose" frigates, stricken 3-84 after having been recommissioned because of the Falklands War. Purchased by Indonesia 16-4-84 and towed to Vosper Thornycroft, Woolston, for overhaul/modernization during April-June 1984. 331 began post-refit trials 22-3-85 and recommissioned 2-5-85, 332 recommissioned 21-10-85. Data above as in Royal Navy service.

Twin rudders, one pair fin stabilizers. The helicopter flight deck has a small hanger beneath, into which the aircraft is lowered by elevator; the resultant hole is covered with segmented panels normally stowed beside the Limbo mortar position. MRS3 director with Type 903 radar for the 114-m guns, two modified MRS.8 directors with Type 262 radars for the Sea Cat systems. 332 had Type 199 variable-depth soner removed prior to transfer.

 4 ex-U.S. Claud Jones class Bldrs: 341, 343: Avondale Marine, Westwegt, La.; 342, 344: American SB, Toldeo, Ohio

| | L | In serv. |
|---|---------|----------|
| 341 Samadikun (ex-John R. Perry, DE 1034) | 29-7-58 | 5-5-59 |
| 342 Martadinata (ex-Charles Berry, DE 1035) | 17-3-59 | 25-11-60 |
| 343 Mongindisi (ex-Claud Jones, DE 1033) | 27-5-58 | 10-2-59 |
| 344 NGURAH RAI (ex-McMorris, DE 1036) | 26-5-59 | 4-3-60 |

FRIGATES (continued)



Ngurah Rai (344)

R. Gillett, 11-84

D: 1,450 tons (1,750 fl) S: 22 kts

Dim: 95.10 (91.75 wl) × 11.84 × 3.66 (hull)/5.50 (sonar)

A: 1 or 2/76.2-mm DP (I × 1 or 2) -0 or 2/37-mm AA (II × 1) -0 or 2/25-mm AA (II \times 1) -6/324-mm ASW Mk 32 TT (III \times 2)

Electron Equipt: Radar: 1/Decca 1226, 1/SPS-10, 1/SPS-6, 1/SPG-52 Sonar: SQS-42 series - EW: WLR-1 (not in 341)

M: 4 Fairbanks-Morse 38ND8% diesels; 1 prop; 9,240 hp Electric: 600 kw Fuel: 296 tons Range: 3,590/22; 10,300/9 Man: 15 officers, 160 men

Remarks: No. 341 was transferred on 20-2-73, No. 342 on 31-1-74, Nos. 343 and 344 on 16-12-74. Nos. 341 and 342 have a twin Soviet 37-mm AA in place of one 76.2-mm on fantail and a twin 25-mm at the forecastle break. Navigational radar added 1980-81. Have Mk 70 Mod. 2 GFCS, Mk 105 ASW FCS.

Note: The ex-Soviet Riga-class frigates Jos Sudarso (351) and Lambung Manegurat (357) were stricken 1985.

GUIDED-MISSILE PATROL BOATS

 4 PSK Mk-5 class Bldr: Korea-Tacoma SY In serv. In serv. 621 MANDAU 7-79 623 BADEK 2-80 622 RENCONG 7-79 624 KERIS 2-80



Rencong (622)

R. Gillett, 11-84

D: 250 tons (290 fl) S: 41 kts Dim: 53.58 × 8.00 × 1.63 (hull)

A: 4/MM 38 Exocet (II × 2) - 1/57-mm Bofors AA - 1/40-mm Bofors AA -2/20-mm AA (I \times 2)

Electron Equipt: Radar: 1/Decca AC 1229, 1/H.S.A. WM-28

M: CODOG: 1 G.E.-Fiat LM-2500 gas turbine, 25,000 hp; 2 MTU 12V331 TC81 diesels, 1,120 hp each; 2 CP props

Fuel: 65 tons Range: 2,500/17 Electric: 400 kw Man: 5 officers, 34 men

Remarks: First unit laid down 5-77. Modification of U.S. Asheville-class design. A second group of four were not ordered as planned.

PATROL BOATS AND CRAFT

♦ 1 (+. . .) Lürssen PB 57 design Bldr: Lürssen, Vegesack, West Germany and P.T. PAL SY, Surabaja

... N. . . (In serv. 1985)

D: 342 tons (399 ft) S: 29.5 kts Dim: 58.10 (54.40 wl) × 7.60 × 2.80

A: 1/76-mm OTO Melara Compact DP-1/40-mm AA

Electron Equipt: Radar:

M: 3 MTU 16V956 TB92 diesels; 3 props; 11,400 hp

Electric: 405 kVA Range: 4,200/17 Man: 3 officers, 27 men

Remarks: Of two complete mid-bodies, one shipped from West Germany in 1-84 and one in 7-84, one was intended for the Navy and one for the Customs Service. Bows and sterns added at Surabaja. Three more for the Navy were planned, but construction may have been canceled; these would have been built entirely in Indonesia. Helicopter platform fitted aft.

◆ 1 (+4+6+36) Jetfoil Model 929 hydrofoils

| | Bldr | L | In serv. |
|-----------------|-----------------|----------|----------|
| BIMA SAMUDERA I | Boeing, Seattle | 22-10-81 | 14-12-81 |
| | Boeing/P.T. PAL | 1984 | 1987 |
| | Boeing/P.T. PAL | 6-1-84 | 1987 |
| | Boeing/P.T. PAL | 1985 | 1988 |
| | Boeing/P.T. PAL | 1985 | 1988 |



Bima Samudera I

Boeing Marine Systems, 1981

D: 115 tons (fl) S: 46 kts

Dim: 27.4 (foils down) × 9.1 × 1.9 (5.2 foils down, 2.0 max. foiling)

Electron Equipt: Radar: 1/Decca . .

M: 2 Allison 501-K20A gas turbines; 2 Rocketdyne R-20 waterjet pumps; 7,560 hp — 2 G.M. 8V92 TI diesels; 2 props; 900 hp for hull-borne cruise

Range: 900/40; 1,500/15 Fuel: 33.4 tons

Man: 6 tot. plus 260 passengers

Remarks: Bima Samudera I was purchased by the Indonesian Agency for the Development and Application of Technology for evaluating such a craft in naval patrol, logistics support, and civil roles. Naval-manned. Delivered in-country 2-82. Has enhanced fuel tankage over standard commercial model. Aluminum construction.

The hydrofoil contract with Boeing Marine Services calls for two each of two versions of the basic Jetfoil design, with construction taking place at P.T. Pabrik Kapal (P.T.PAL), Indonesia. Another six craft are on option, and a total of 47 is foreseen. The first four were built by Boeing, Seattle, and delivered to Indonesia for fitting out. The patrol version (see illustration) may be armed with a Bofors 57-mm SAK Mk 2 DP gun and 2/12.7-mm mg and may also have two 6-tubed chaff RL and an optronic fire-control system. The troop transport version will resemble the prototype Bima Samudera I, with the addition of two 25-man semirigid inflatable boats slung over the stern; it will carry up to 100 troops and will be armed with a 20-mm AA and 2/12.7-mm mg (I × 2). The first production boat was laid down 10-12-83. The first two were delivered 1-85 to P.T.PAL for outfitting and completion by 1987. Numbers 3 and 4, intended as gunboats, to be shipped 3-86 and 11-86.



Indonesian patrol hydrofoil - artist's rendering

Boeing Marine, 1983

PATROL BOATS AND CRAFT (continued)



Troop-carrying hydrofoil on trials

Boeing, 1-85

| ♦ 4 Carpentaria class Bldr: D | | Bldr: De Havill | Havilland Marine, Austral | |
|-------------------------------|----------|-----------------|---------------------------|--|
| 051 () | In serv. | 055 0 | In serv. | |
| 851 Samadar | 8-76 | 855 SADARIN | 12-76 | |
| 854 SAWANGI | 11-76 | 856 SALMANETI | 7-77 | |



Samadar (851)

1981

D: 27 tons (fl) S: 25 kts Dim: $15.7 \times 5.0 \times 1.3$ A: 2/12.7-mm mg ($I \times 2$) Electron Equipt: Radar: 1/Decca 110

M: 2 MTU 8V331 diesels; 2 props; 1,400 hp Range: 950/18 Man: 10 tot.

Remarks: Grant-aid from Australia. Aluminum construction. Sisters Sasila (852) and Sabola (853) transferred to Sea Police 1981.

• 8 Australian Attack class

| | Bldr | L | In serv. |
|---------------------------|---------------|---------|----------|
| 847 Sibaru (ex-Bandolier) | Walkers, Ltd. | 1967 | 1968 |
| 848 SULIMAN (ex-Archer) | Walkers, Ltd. | 1967 | 1968 |
| 857 Sigalu (ex-Barricade) | Evans Deakin | 29-6-68 | 26-10-68 |
| 858 Silea (ex-Acute) | Evans Deakin | 29-8-67 | 26-4-68 |
| 8 SIRIBUA (ex-Bombard) | Walkers, Ltd. | 6-7-68 | 5-11-68 |
| 8 Siada (ex-Barbette) | Walkers, Ltd. | 10-4-68 | 16-8-68 |
| 8 N (ex-Buccaneer) | Evans Deakin | 14-9-68 | 11-1-69 |
| 8 Sikuda (ex-Attack) | Evans Deakin | 8-4-67 | 17-11-67 |



Suliman (848)

10-81

D: 146 tons (fl) S: 21 kts Dim: 32.76 (30.48 pp) × 6.2 × 1.9

A: 1/40-mm AA -2/7.62-mm mg (I \times 2)

Electron Equipt: Radar: 1/Decca RM 916

M: 2 Davey-Paxman Ventura 16 YJCM diesels; 3,460 hp Fuel: 20 tons Range: 1,220/13 Man: 3 officers, 19 men

Remarks: Light-alloys superstructure. Air-conditioned. 847 transferred 16-11-73, 848 in 1974, 857 on 22-4-82, 858 on 6-5-83, and ex-Bombard later in 1983. Ex-Barbette transferred 22-85, ex-Buccaneer in 1-86, and ex-Attack on 24-5-85.

4 ex-Yugoslav PBR-500 class

822 DORANG 819 KAYANG 820 Lemadang 823 Todak



Kayang (819)

10-81

D: 190 tons (202 fl) S: 18 kts Dim: 41.0 × 6.3 × 2.2

A: 1/76.2-mm — 1/40-mm AA — 6/20-mm AA (II × 3) — 2/Mousetrap Mk 22 ASW RL-2/d.c. projectors-2/d.c. racks

Electron Equipt: Radar: 1/Decca 45 — Sonar: U.S. QCU-2

M: 2 M.A.N. W8V 30/38 diesels; 2 props; 3,300 hp Fuel: 15 tons

Range: 1,000/12 Man: 54 tot.

REMARKS: Transferred in 1959. Krapu (821) and Dorang (822) stricken 1980. Rest to strike shortly.

• 2 Soviet Kronshtadt class

Bldr: U.S.S.R., 1951-52

814 PANDRONG 815 SURA



Sura (815)

1978

D: 300 tons (330 fl) S: 18 kts Dim: 52.1 × 6.5 × 2.2

A: 1/85-mm - 2/37-mm AA (I × 2) - 6/14.5-mm - 2/MBU 1200 ASW RL $(V \times 2) - 2/d.c.$ projectors -2/d.c. racks - mines

M: 3 9D diesels; 3 props; 3,300 hp Fuel: 20 tons Range: 3,500/14 Man: 50 tot.

Remarks: Transferred 1958-59. A number of others have been stricken, including Kakap (816) in 1981 and Barakuda (817) in 1985.

MINE COUNTERMEASURES SHIPS

♦ 0 (+2) Alkmaar ("Tripartite")-class minehunters Bldr: Van der Giessen de Noord, Alblasserdam, the Netherlands

| | Ordered | Laid down | L | In serv. |
|----------------------------|---------|-----------|---|----------|
| N (ex-Zierikzee, ex-Veere) | 27-3-85 | | | 8-87 |
| N (ex-Vlaardingen) | 6-85 | | | 3-88 |

D: 510 tons (540 fl) **S:** 15 kts **Dim:** 51.5 (47.1 pp) \times 8.90 \times 2.45 (2.6 max.)

A: 1/20-mm AA

Electron Equipt: Radar: 1/Decca TM 1226C

Sonar: DUBM-21B

M: 1 Brons-Werkspoor A-RUB215X12 diesel; 1 CP prop; 1,900 hp — 2/75-hp bow-thrusters; 2/120-hp Schöttel active rudders (7 kts)

Electric: 970 kw Range: 3,500/10; 3,000/12 Man: 45 tot.

MINE COUNTERMEASURES SHIPS (continued)

REMARKS: Will be taken from Royal Netherlands Navy production. Glass-reinforced plastic construction. Carry two PAP-104 remote-controlled minehunting/destruction submersibles and can also tow a wire sweep. DUBM-21B can detect mines in up to 80-m depth to slant ranges of 500 m. Have three 270 gas turbines and one 160-kw diesel generator sets. Active tank stabilization. EVEC 20 plot table, autopilot, Toran and Syledis radio navaids, Decca Hi-Fix precision nav. system.

Note: A widely reported 1983 order for six Italian Lerici-class minehunters was not consumated.

♦ 2 ex-Soviet T-43-class minesweepers

701 PULAU RANI 702 PULAU RATEWO

D: 500 tons (570 fl) S: 14 kts Dim: 58.0 × 8.6 × 2.3

A: 4/37-mm AA (II × 2) −8/12.7-mm mg (II × 4) −2/d.c. projectors −2/mine

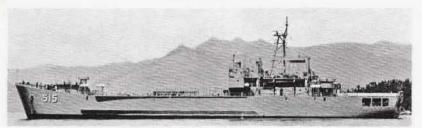
M: 2 Type 9D diesels; 2 props; 2,200 hp Fuel: 70 tons Range: 3,200/10

Remarks: Transferred 1962-64. Used on patrol duties. Three others lost or stricken 1980-81. To be replaced by the Alkmaar-class units.

AMPHIBIOUS WARFARE SHIPS

 6 Teluk Semangka-class landing ships Bldr: Hyundai SY, South Korea

| | In serv. | | In serv. |
|--------------------|----------|------------------|----------|
| 512 TELUK SEMANGKA | 20-1-81 | 515 TELUK SAMPIT | 1981 |
| 513 TELUK PENYU | 20-1-81 | 516 TELUK BANTEN | 1982 |
| 514 TELUK MANDAR | 7-81 | 517 TELUK ENDE | 2-9-82 |



Teluk Sampit (515)

Korea Tacoma, 1981



Teluk Penyu (513)

Korea Tacoma, 1981

D: 1,800 tons (3,770 fl) S: 15 kts Dim: 100.0 × 15.4 × 4.2 (3.0 mean) A: 3/40-mm AA $(I \times 3) - 2/20$ -mm AA $(I \times 2)$

M: 2 diesels; 2 props; 6,860 hp (5,600 sust.) Electric: 750 kw Range: 7,500/13 Man: 13 officers, 104 men, plus 202 troops

Remarks: First four ordered 6-79, two more in 6-81. Near duplicates of U.S. LST 1/542-class design. Beaching load: 690 tons (17 main battle tanks), or up to 1,800 tons max. Helicopter decks amidships and aft. Carry 2 LCVP landing craft. There is a 50-ton-capacity turntable in the tank deck and an elevator to the upper deck. 516 and 517 have a large hangar incorporated in the superstructure, the helicopter deck raised one level, the forward helicopter positions deleted, the landing craft davits moved forward of the superstructure, and increased command facilities to act as flagships; they can carry three AS.332 Super Puma helicopters.

 5 ex-U.S. LST 542-class tank landing ships Bldr: Chicago Bridge & Iron Wks., Seneca, Ill. (except 511: American Bridge, Ambridge, Pa.; 509: unknown)

| | Laid down | L | In serv. |
|--|-----------|----------|----------|
| 501 Teluk Langsa (ex-LST 1128) | 23-11-44 | 19-2-45 | 9-3-45 |
| 504 Teluk Kau (ex-LST 652) | 24-7-44 | 19-10-44 | 1-1-45 |
| 509 TELUK RATAI (ex-M/V Inagua Shipper, ex-LST) | 4 4 4 | | |
| 510 TELUK SALEH (ex-Clarke County, LST 601) | 21-10-43 | 4-3-44 | 25-3-44 |
| 511 TELUK BONE (ex-Iredell County, LST 839) | 25-9-44 | 12-11-44 | 6-12-44 |

D: 1,650 tons light (4,080 fl) S: 11.6 kts Dim: 99.98 × 15.24 × 4.29

A: 6 or 7/40-mm or 37-mm AA

M: 2 G.M. 12-567A diesels; 2 props; 1,800 hp Electric: 300 kw Fuel: 590 tons

Range: 6,000/9 (loaded) Man: 119 crew + 264 passengers

REMARKS: Transferred in 3-60, 1961, and Nos. 510 and 511 in 7-70 under the Military Assistance Program. Can carry 2,100 tons of cargo. Sisters Teluk Bayer and Teluk Tomani are in the Military Sealift Command, as is the Japanese-built near-sister Teluk Amboina.

HYDROGRAPHIC SHIPS

Note: The 1,000-ton hydrographic ship Bimasakti ordered 15-12-82 from Amels SY, Makkum, The Netherlands, is for government, not naval service:

Dim: 59.8 × 13.0 × 3.6; M: 2 diesels; 14 kts.

Three 36-m government research boats were ordered from La Manche, Dieppe, France.

Bldr: Schlichtingwerft, Travemünde (L: 8-65; In serv. 1 Burudjulasad class 1967)

931 BURUDJULASAD



Burudjulasad (931)

1981

D: 1,800 tons (2,150 fl) S: 19 kts Dim: 82.0 (78.0 pp) × 11.4 × 3.5 M: 4 M.A.N. V6V 22/30 diesels; 2 CP props; 6,400 hp Electric: 1,008 kw

Fuel: 600 tons Range: 14,500/15.7 Man: 13 officers, 88 men, 28 technicians

Remarks: Launched in 8-65. Can accommodate 28 scientists and can carry one heli-

1 hydrometeorological and oceanographic research ship

Bldr: Sasebo Heavy Industries, Japan (In serv. 12-1-63)

1005 Jalanidhi



Jalanidhi (1005)

1972

D: 740 tons (985 fl) S: 12.7 kts Dim: 53.9 (48.5 pp) × 9.5 × 4.3 M: 1 M.A.N. G6V 30/42 diesel; 1,000 hp Electric: 261 kw Fuel: 165 tons Range: 7,200/10.5

Remarks: Weather-balloon facility aft.

◆ 1 ex-Soviet PO-2-class inshore survey craft

1008 ARIES

D: 56 tons (fl) S: 12 kts Dim: 21.3 × 3.8 × 2.0 M: 13D12 diesel; 300 hp Man: 13 tot.

Remarks: Transferred in 1964.

• 1 hydrographic survey ship Bldr: De Waal Scheepswerf, Nijmegen (L: 6-9-52; In serv. 7-53)

1002 Burdjamhal

D: 1,200 tons (1,500 fl) S: 13 kts Dim: 64.5 (58.5 pp) × 10.1 × 3.3 M: 2 Werkspoor TMAB-278 diesels; 2 props; 1,160 hp Fuel: 150 tons Man: 90 tot.

AUXILIARY SHIPS

♦ 1 ex-Soviet Don-class submarine tender

Bldr: U.S.S.R., 1960

301 RATULANGI (ex-Sov. 441)

AUXILIARY SHIPS (continued)



Ratulangi (ex-441)

D: 6,700 tons (fl) S: 21 kts Dim: 139.9 \times 17.6 \times 5.4 A: 4/100-mm DP (I \times 4) - 8/57-mm AA (II \times 4) - 8/25-mm AA (II \times 4)

Electron Equipt: Radar: 1/navigational, 1/Slim Net, 1/Sun Visor A M: 4 diesels; 2 props; 8,000 hp Range: 21,000/10 Man: 300 tot.

Remarks: Transferred in 1962. Because of heavy armament and extensive sensors, is used for patrol duties.

♦ 1 command ship

Bldr: Ishikawajima, Japan (L: 13-6-61)

561 Multatuli



Multatuli (561)

J. Jedrlinic, 1982

D: 4,500 tons (fl) **S:** 18.5 kts **Dim:** 111.35 (103.0 pp) \times 16.0 \times 6.98 **A:** 8/37-mm AA (II \times 2, I \times 4) — 4/14.5-mm AA (II \times 2)

M: 1 Burmeister & Wain diesel; 5,500 hp Fuel: 1,400 tons Range: 6,000/16 Man: 134 tot.

Remarks: Built as a submarine-support ship, converted as a fleet command ship in the late 1960s. Has a helicopter platform aft. Construction of two similar ships of about 10,000 tons, to carry fuel, troops, and hospital facilities, is planned.

◆ 1 ex-U.S. Achelous-class repair ship

Bldr: Chicago Bridge & Iron, Seneca,

Illinois

ex-LST 1131)

Laid down In serv. 921 Jaja Widjaja (ex-Askari, ARL 30, 8-12-44 2-3-45 15-3-45



Jaja Widjaja (921)

1981

D: 2,130 (3,640 fl) **S:** 11 kts **Dim:** 99.98 × 15.24 × 4.25 A: 8/40-mm AA (IV × 2) M: 2 G.M. 12-267A diesels; 2 props; 1,800 hp Electric: 520 kw Fuel: 590 tons Man: 280 tot.

Remarks: Leased 31-8-71; purchased 22-2-79. Cargo capacity: 300 tons. 60-ton lift rig.

• 1 replenishment oiler

Bldr: Yugoslavia, 1965

911 SORONG

D: 5,100 (dwt) **S**: 15 kts **Dim**: $112.17 \times 15.4 \times 6.6$ A: 8/12.7-mm mg (II × 4) M: 1 diesel; 1 prop; . . . hp



Sorong (911)

Remarks: Cargo: 3,000 tons fuel/300 tons water. Can conduct underway replenish-

1 ex-Soviet Khobi-class oiler

909 PAKAN BARU

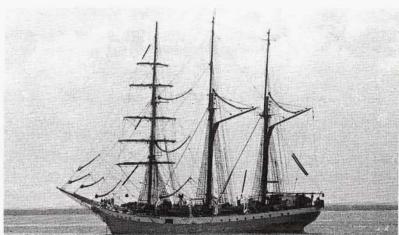
D: 1,525 tons (fl) **S:** 12.7 kts **Dim:** 67.4 (63.7 pp) \times 10.0 \times 4.4 M: 2 diesels; 2 props; 1,600 hp Range: 2,500/12.5

Remarks: Cargo: 700 tons fuel oil.

1 sail-training ship

Bldr: Stülcken, Hamburg (L: 21-1-52)

DEWARUTJI



Dewarutji

1977

D: 810 tons (1,500 fl) **S**: 9 kts **Dim**: 58.3 (41.5 pp) \times 9.5 \times 4.23 M: 1 M.A.N. diesel; 575 hp Man: 110 men, 78 cadets

Remarks: Sail area: 1,091 m2.

◆ 1 ex-U.S. Cherokee-class fleet tug

Bldr: United Eng., Alameda, California

Laid down

In serv.

922 RAKATA (ex-U.S. Menominee, ATF 73)

27-9-41

14-2-42 25-9-42

D: 1,640 tons (fl) **S:** 15 kts **Dim:** $62.5 \times 11.7 \times 4.7$ **A:** 1/76.2-mm DP-2/40-mm AA (I $\times 2$)-4/25-mm AA (II $\times 2$)

M: 4 G.M. 12-278A diesels, electric drive; 1 prop; 3,000 hp

REMARKS: Transferred 3-61.

Bldr: P.T.PAL, Surabaja (L: 6-6-79) ♦ 1 coastal tug

D: . . . **S:** 10 kts **Dim:** $24.25 \times 6.5 \times .$. . **M:** Diesel; 1 prop; . . . hp Man: 10 tot.

 1 coastal tug Bldr: Ishikawajima Harima, Tokyo (L: 4-61)

934 LAMPO BATANG

D: 250 tons **S:** 11 kts **Dim:** $28.1 \times 7.6 \times 2.6$ M: 2 M.A.N. diesels; 2 props; 600 hp Fuel: 18 tons Range: 1,000/11 Man: 13 tot.

 2 Tambora-class coastal tugs 6-61)

Bldr: Ishikawajima Harima. Tokyo (both L:

935 Tambora 936 Bromo

D: 250 tons (fl) **S:** 10.5 kts **Dim:** $24.1 \times 6.6 \times 3.0$ M: 2 M.A.N. diesels; 2 props; 600 hp Fuel: 9 tons Range: 690/10.5 Man: 15 tot.

MILITARY SEALIFT COMMAND (KOLINLAMIL)

Formed in 1978 to coordinate the Indonesian Navy's logistic support for its far-flung bases and outposts in the Indonesian archipelago. Some of the units have been taken over from the Indonesian Army and others from the Navy.

1 tank landing ship

Bldr: Sasebo Heavy Industries (L: 17-3-61)

9. . . TELUK AMBOINA

MILITARY SEALIFT COMMAND (KOLINLAMIL) (continued)

D: 4,145 tons (fl) **S:** 13 kts **Dim:** $99.9 \times 15.2 \times 4.6$

A: 4/40-mm AA — 1/37-mm AA M: 2 M.A.N. V6V 22.30 diesels; 2 props; 3,200 hp (2,850 sust.)

Electric: 135 kw Fuel: 1,200 tons Range: 4,000/13

Man: 88 men + 212 passengers

REMARKS: Built as reparations. Near duplicate of U.S. LST 542 design. Guns may have been removed. Can carry 654 tons water. Has a 30-ton crane.

2 ex-U.S. LST 542-class tank landing ships

| | Bldr | Laid down | L | In serv. |
|--------------------------------|-----------------------------------|-----------|---------|----------|
| 9 Teluk Bayer | Chicago Bridge & Iron, | 12-2-44 | 12-5-44 | 29-5-44 |
| (ex-LST 616) 9 Teluk Tomani | Seneca, Ill. Boston Navy Yard, | 22-12-43 | 10-2-44 | 25-3-44 |
| (ex-LST 983) | Boston, Mass. | | | |

D: 1,650 tons (4,080 fl) S: 11 kts Dim: 99.98 × 15.24 × 4.29

A: None M: 2 G.M. 12-567A diesels; 2 props; 1,800 hp

Fuel: 590 tons Range: 6,000/9 (loaded) Man: 119 men + 264 passengers

Remarks: Bought since 1961. Teluk Tomani is used as a cattle-carrier and does not carry passengers (by mutual agreement?).

♦ 3 Krupang-class utility landing craft Bldr: Surabaja DY

9. . . Krupang (In serv. 3-11-78) 9. . . Dili (In serv. 27-2-79) 9. . . Nusantara (In serv. 1980)

D: 400 tons (fl) S: 11 kts Dim: 42.9 (36.27 pp) × 9.14 × . . . M: 2 diesels; 2 props; . . . hp Range: 700/11 Man: 17 tot.

Remarks: Based on U.S. LCU 1610 class. Cargo: 200 tons.

♦ 2 Amurang-class landing craft Bldr: Korneuberg SY, Austria (In serv. 1968)

9. . . Amurang 9. . . Dore

D: 182 tons (275 fl) S: 8 kts Dim: 38.3 × 10.0 × 1.8

M: 2 diesels; 2 props; 420 hp Man: 17 tot.

REMARKS: Sister Banten and one other in merchant service. 200 grt.

• 1 oiler Bldr: Japan, 1965

901 BALIKPAPAN (ex-Komado V)

D: 1,780 dwt S: 11 kts Dim: 69.6 × 9.6 × 4.9

M: 1 diesel; 1,300 hp Man: 26 tot.

REMARKS: Purchased in 1977.

♦ 1 small oiler Bldr: . . . , Indonesia (In serv. 1979)

902 Sambu



Sambu (902) - with missile boats Keris (624) and Rencong (622) alongside

D: . . . **S**: . . . **Dim**: Approx. 70.0 × 10.0 × 4.6 m A: 4/14.5-mm mg ($\Pi \times 2$) Electron Equipt: Radar: 1/... nav. M: 1 diesel; 1 prop; . . . hp

Remarks: No further data available.

6 Hungarian Tisza-class cargo ships Bldr: Angyalfold SY, Budapest

951 TRLAUD 953 NATUNA 957 KARIMUNDSA 952 Nusatelu 956 TELUK MENITAWI 960 Karamaja

D: 2,000 tons (fl) **S:** 12 kts **Dim:** 74.5 (67.4 pp) \times 11.3 \times 4.6

A: Some ships: 4/14.5-mm mg (II \times 2) M: 1 Lang 8-cyl. diesel; 1,000 hp Electric: 746 kw Fuel: 98 tons Range: 4,200/10.7 Man: 26 tot.

Remarks: Transferred 1963-64. Taken over from the Army in 1978. Had originally been naval. 1,296 grt/1,280 dwt. Cargo: 1,100 tons.

• 1 former pilgrim transport Bldr: Blohm + Voss, Hamburg (In serv. 1936)

971 TANJUNG PANDAN (ex-Genung Djati, ex-Empire Orwell, ex-Empire Doon, ex-Pre-

D: . . . S: . . . Dim: 167.6 × 22.0 × . . .

M: 8 sets GT; 4 props; . . . hp

Remarks: 17,362 grt. German liner, used as a barracks during W.W. II, to U.K. in 1945, used as a troopship, then transport for religious pilgrims. Sold to Indonesia 1962. Acquired 1981 for Kolinlamil, but has remained immobile at Tanjung Priok.

Bldr: N.V. Scheepswerfen Machinefabrick • 1 former passenger-cargo ship de Merwede, Hardinxveld, the Netherlands

931 Tansung Pandan (ex-Tjut Njak Dhien, ex-Prinses Irene) (In serv. 1965)

D: . . . S: 16.5 kts Dim: 139.92 × 18.67 × 8.61 M: Diesels; 1 prop; 8,600 hp

Remarks: 8,456 grt/8,618 dwt. Purchased 1978 for use as a transport.

1 former passenger-cargo ship

932 Tansung Oisina (ex-Gununjati) (In serv. . . .)

Remarks: Approx. 6-8,000 grt. Purchased 1978 for use as a transport. No further data available.

 . . . coastal cargo lighters Bldr: Fasharkan DY, Manokwari, Irian

D: . . . S: 8 kts Dim: 31.1 × 6.26 × 1.80

Remarks: 200 dwt. First unit delivered 7-3-82. Others may be built.

SEA COMMUNICATIONS AGENCY

Established in 1978 to patrol Indonesia's 200-nautical-mile economic zone and to maintain navigational aids. Full name: Indonesian Directorate General of Sea Communication/Department of Transport, Communications and Tourism.

PATROL BOATS

♦ 4 Golok class Bldr: Schlichtingwerft, Harmsdorf, W. Germany

| | In serv. | | In serv. |
|---------------|----------|----------------|----------|
| PAT 206 GOLOK | 12-3-82 | PAT 208 PEDANG | 12-5-82 |
| PAT 207 PANAH | 12-3-82 | PAT 209 KAPAK | 12-5-81 |

D: 200 tons (fl) S: 28 kts Dim: 37.50 × 7.00 × 2.00

A: 1/20-mm AA Range: 1,500/18 Man: 18 tot.

M: 2 MTU 16V652 TB61 diesels; 2 props; 4,200 hp

Remarks: Intended for search-and-rescue duties. 1203/hr. fire pump and water monitor, rescue launch, 8-man sick bay. Hulls built by Deutsche Industrie Werke, Berlin.

♦ 5 Kujang class Bldr: SFCN, Villeneuve-la-Garenne, France

| | Laid down | L | In serv. |
|-----------------|-----------|----------|----------|
| PAT 201 KUJANG | 5-80 | 17-10-80 | 19-8-81 |
| PAT 202 PARANG | 7-80 | 18-11-80 | 19-8-81 |
| PAT 203 CELURIT | 9-80 | 20-3-81 | 1981 |
| PAT 204 CUNDRIK | 7-9-80 | 10-11-80 | 1981 |
| PAT 205 BELATI | 2-81 | 21-5-81 | 10-81 |



Parang (202)

SFCN, 1981

D: 126 tons (162 fl) S: 28 kts

Dim: 38.32 (35.46 pp) × 6.00 × 1.78 (2.60 props) A: 1/20-mm AA

M: 2 S.A.C.M. AGO V12 195 CZ SHR T5; 2 props; 4,400 hp

Range: 1,500/18 Man: 18 tot.

Remarks: Intended for search-and-rescue duties.

◆ 6 PAT-01-class patrol craft Bldr: Tanjung Priok SY, 1978-79

PAT 01 to PAT 06

D: 12 tons (fl) **S:** 14 kts **Dim:** $12.15 \times 4.25 \times 1.0$

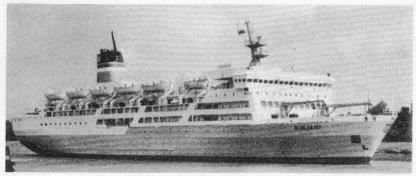
A: mg M: 1 Renault diesel; 260 hp

TRANSPORTS

• 4 Kerinci class

Bldr: Meyerwerft, Papenburg, West Germany

Kerinci (In serv. 1983) Kambuna (In serv. 8-83) RINJANI (In serv. 10-84) Umsini (In serv. 1985)



Rinjani

Meyerwerft, 1984

D: . . . S: 20 kts Dim: 144.0 (130.0 pp) × 23.4 × 5.9 M: 2 Mak 6MU601 diesels; 2 props; 17,000 hp Electric: 3,520 kw Range: 5,500/20 Man: 119 crew + 1,596 to 1,737 passengers

Remarks: 13,861 + 13,954 grt/3,400 dwt. Intended for inter-island revenue passenger-carrying in peacetime and as military transports in time of war. Accommodations for approximately 100 first-class, 200 second, 300 third, 496 fourth-class and 500-plus economy passengers. Bow-thruster.

NAVIGATIONAL AID TENDERS

 0 (+11) lighthouse and buoy tenders Australia

Bldr: Carrington Slipway, Tomago,

REMARKS: Ordered 12-84. To fit out in Indonesia.

♦ 2 coastal service

Bldr: . . . , Japan (In serv. 1976)

KARAKATA KUMBA

D: 569 grt/552 dwt **S:** 13 kts **Dim:** 50.50 (47.43 pp) \times 10.00 \times 3.71 **M:** 2 Niigata diesels; 1 prop; 850 hp

Remarks: Two more buoy tenders were ordered from Japan in 1978.

♦ 2 seagoing buoy tender/cargo ships

Bldr: . . . (In serv. 1963)

MAJANG MIZAN

D: 2,150 tons (fl) **S:** 14 kts **Dim:** 78.0 (71.0 pp) \times 13.7 \times 4.0 **M:** 1 set 4-cyl. compound reciprocating steam; 1 prop; 1,800 hp **Boilers:** Two 16 kg/cm² **Fuel:** 376 tons **Man:** 70 tot.

Remarks: 1,705 grt/1,170 dwt. Resemble small cargo ships, with bridge forward, engine aft, and holds amidships.

♦ 1 seagoing buoy tender and cable layer Bldr: . . . , the Netherlands Biduk (L: 30-10-51; In serv. 7-52)

D: 1,250 dwt S: 12 kts Dim: 65.0 × 12.0 × 4.5 Boilers: two 16-kg/cm² M: 1 set triple-expansion reciprocating steam; 1 prop; 1,600 hp Man: 66 tot.

REMARKS: Cable sheaves over bow. Transferred from Navy, 1978 (ex-pendant 1003).

◆ 2 split-hopper dredges Bldr: Tanjung Priok SY, Jakarta

N. (In serv. 1983) N. (In serv. 1983)

D: 1,600 tons (fl) **S:** 10.7 kts **Dim:** . . . × . . . × 4.05 m

M: 2 Bolnes 6DNL 150 diesels; 2 CP props; 1,692 hp

Electric: 1,280 kw Man: 25 tot.

Remarks: 1,000 m³ capacity, able to dredge to 14 m. 272-hp bow-thruster. Built with assistance from IHC Holland. Ordered 1981, laid down 1982.

♦ 1 suction hopper dredge Bldr: Orenstein & Koppel, Lübeck, West Germany IRIAN (L: 26-6-81)

D: 9,500 tons (fl) **S:** 12 kts **Dim:** $110.0 \times 18.0 \times 7.1$ **M:** 2 MWM diesels; 2 props; 7,700 hp

CUSTOMS SERVICE

Note: The Indonesian Customs Service is currently undergoing an ambitious expansion, with patrol boats and craft constructed in Western Europe and at home.

PATROL BOATS

1 (+...) Lürssen PB 57 design-programmed
 West Germany/P.T.PAL SY, Surabaja (In serv. 1985)

Bldr: Lürssen, Vegesack,

D: 342 tons (399 fl) S: 29.5 kts Dim: 58.10 (54.40 wl) × 7.60 × 2.8 A: 76-mm OTO Melara DP—1/40-mm AA Electron Equipt: Radar: . . . M: 3 MTU 16V956 TB92 diesels; 3 props; 11,400 hp Electric: 405 kVA Range: 4,200/17 Man: 3 officers, 27 men

Remarks: First unit is one of two completed mid-bodies shipped to Indonesia 1-84 and 7-84 for addition of bows and sterns at P.T.PAL, Surabaja. Plans to build three more each for the Navy and Customs Service put on hold 7-84, pending possibility of shifting production to Tanjung Priok Navy Yard. Has a small helicopter platform aft.

♦ 30 (+5) Lürssen FPB 28 class

| BC 4001 through BC 4006 | Lürssen, Vegesack | 4-81 to81 |
|-------------------------|----------------------|----------------|
| BC 5001 through BC 5006 | Lürssen, Vegesack | to |
| BC 6001 through BC 6005 | BSC, Belgium | 11-81 to 8-82 |
| BC 7001 through BC 7006 | BSC, Belgium | 8-2-82 to 8-82 |
| BC 8001 through BC 8006 | P.T.PAL SY, Surabaja | 1-85 to |
| BC 9001 through BC 9006 | P.T.PAL SY, Surabaja | to |
| | | |



BC 4001

J. Jedrlinic, 1981

D: 61 tons (68.5 fl) **S:** 30 kts **Dim:** 28.0 (26.0 wl) \times 5.4 \times 1.6

A: 1/12.7-mm mg

M: BC 4001-4003 and BC 6001-6005: 2 Deutz SBA 16M 816LCK-R diesels; 2 props; 2,720 hp—others: 2 MTU diesels; 2 props; 2,620 hp
Electric: 36 kVA Fuel: 10 tons Range: 700/27.5; 1,050/17

Man: 6 officers, 13 men

Remarks: Building to replace a series of very similar craft built by Lürssen in 1962-63. A collaborative effort by Lürssen and Abeking and Rasmussen of West Germany and BSC—Belgium Shipbuilding Corp., a consortium of Fulton Marine, Ruisbrock, and Scheepswerven Van Langebrugge—delivering prefabricated sections to PAL shipyard, Surabaja, in addition to building complete boats. BC 5001-5003 rated at 30.6 kts. BC 6001 and 7001 series ordered 1980; BC 8001 and 9001 series ordered 1-81; program well behind schedule, with only two launched by 12-84.

♦ 7 BC 2001 class Bldr: CMN, Cherbourg

| | L | In serv. | | L | In serv. |
|---------|----------|----------|---------|----------|----------|
| BC 2001 | 27-9-79 | 8-2-80 | BC 2005 | 19-8-80 | 5-9-80 |
| BC 2002 | 20-12-79 | 8-2-80 | BC 2006 | 14-10-80 | 7-11-80 |
| BC 2003 | 4-3-80 | 3-4-80 | BC 2007 | 9-12-80 | 10-2-81 |
| BC 2004 | 14-5-80 | 9-6-80 | | | |
| | | | | | |



BC 2001

BC 3004

◆ 7 (+7) BC 3001 class

J. Jedrlinic, 2-84

D: 58.5 tons (70.3 fl) **S:** 29.7 kts (at 64.4 tons) **Dim:** 28.5 (26.5 wl) × 5.4 × 1.3 (1.65 props) **A:** 1/12.7-mm mg

M: 2 MTU 12V331 TC92 diesels; 2 props; 2,440 hp Man: . . . tot.

In serv.

BC 3001 9-7-79 BC 3005 22-10-80
BC 3002 24-1-80 BC 3006 22-1-81
BC 3003 24-4-80 BC 3007 3-4-81

D: 57 tons (71 fl) S: 34 kts Dim: 28.2 × 5.2 × 1.6

A: 1/12.7-mm mg M: 2 MTU 12V331 TC81 diesels; 2 props; 2,700 hp

Range: 800/15 Man: 2 officers, 16 men

Remarks: Similar design to BC 1001 class; also built of wood. Seven more ordered 1982.

Bldr: Chantiers Navals de l'Estérel, Cannes

INDONESIA (continued) PATROL BOATS (continued)



BC 3001

• 3 BC 1001 class Bldr: Chantiers Navals de l'Estérel, Cannes BC 1001 (In serv. 4-75) BC 1002 (In serv. 6-75) BC 1003 (In serv. 11-75)



BC 1002

J. Jedrlinic, 5-84

D: 56 tons (fl) S: 34 kts Dim: 28.0 (26.6 wl) × 5.3 × 1.6 A: 1/12.7-mm mg M: 2 MTU 12V331 TC81 diesels; 2 props; 2,700 hp Fuel: 10 tons Range: 750/15 Man: 15 tot.

• up to 24 BC 401 series Bldr: Lürssen, Vegesack (In serv. 1960-62)

REMARKS: Data as for BC 4001 series, with Deutz engines. BC 401, BC 502, BC 703 and others remain in service pending completion of duplicate replacements.

MARITIME POLICE

PATROL BOATS

| 9 DKN 908 class | Ridr Reglietto | Italy Riva Trigoso | Italy (In serv. 1861-64) |
|-------------------------------------|----------------|--------------------|--------------------------|

DKN 908 DKN 911 DKN 914 DKN 909 DKN 912 DKN 915 DKN 910 DKN 913 **DKN 916**

D: 139 tons (159 fl) S: 21 kts Dim: 42.0 × 6.5 × 1.8 A: 3/20-mm AA (I × 3) M: 2 Maybach MD655 diesels; 2 props; . . . hp

Range: 1,500/17 Man: 22 tot. ◆ 10 DKN 504 class Bldrs: DKN 504-508: Ishikawajima Harima, Tokyo;

others: Uraga Dockyard, Yokosuka (In serv. 1963-64) **DKN 504 DKN 507 DKN 510 DKN 513**

DKN 505 DKN 508 DKN 511 DKN 506 **DKN 509 DKN 512**



DKH 507

D: 314 tons light (390 std., 444 fl) S: 15.3 kts Dim: 48.1 (44.0 pp) \times 7.5 \times 2.9 A: 1/20-mm AA, 2/12.7-mm mg (I \times 2) M: 2 M.A.N. W8V 22/30 ALU diesels; 2 props; 1,400 hp Electric: 126 kw

Fuel: 41 tons Range: 2,700/14 Man: 35 tot.

REMARKS: Cargo hold with 75 tons capacity.

 2 Carpentaria class Bldr: De Havilland Marine, Australia

DKN. . . (ex-Sasila) DKN. . . (ex-Sabola)

REMARKS: Transferred from Indonesian Navy 1981, under which see for data.

INDONESIAN ARMY (ADRI)

At one time the Indonesian Army operated a great variety of ships, including up to 29 units in the ADRI-I series, most of which were old passenger-cargo ships acquired for use as troop transports. Most of its serviceable ships were turned over to the new Military Sealift Command in 1977 and 1978, but a new series of logistics landing craft is under construction.

28 utility landing craft

Bldr: Koja SY, Tanjung Priok (In serv. 1978-1982)

ADRI XXXI to ADRI LVIII

D: 580 tons (fl) S: 10 kts Dim: 42.0 (38.0 wl) × 10.7 × 1.8 M: 2 G.M. 6-71 diesels; 2 props; 680 hp Electric: 100 kw Fuel: 40 tons Range: 1,500/10 Man: 15 tot.

Remarks: 300 dwt. Construction continues. Cargo: 122 tons vehicles/stores; 120 tons water. Two 150-dwt landing craft were also completed during 1980, while in 1982 the first of several 30-dwt landing craft and 180-dwt cargo lighters were acquired.

INDONESIAN AIR FORCE (AURI)

The Indonesian Air Force operates six passenger-cargo logistics ships that were completed in the mid-1960s. Of about 600 dwt, they are intended to beach and are equipped with bow doors.

Islamic Republic of Iran

Personnel (1984): Approx. 10,000 total

Merchant Marine (1984): 306 ships - 2,105,549 grt (tankers: 33 ships - 944,727 grt)

MARITIME AVIATION: On hand before the revolution and war with Iraq were: 7 SH-3D Sea King, 7 AB-212, 5 AB-205A, 14 AB-206A, and 2 Sikorsky RH-53D helicopters; and fixed-wing assets remaining include 2 P-3F Orion long-range patrol aircraft; 4 Fokker F-27 Mk 400M Friendship transports; 4 Falcon 20 and 4 Aero Commander utility transports.

Weapons: Three Iranian destroyers use General Dynamics-developed fixed-train, elevatable box-launchers to fire U.S.-supplied Standard SM-1 MR surface-to-air missiles; these have a secondary anti-ship capability. Target tracking and illumination is supplied by shipboard gunnery radars. Four Vosper Mk 5 frigates carry a quintuple position, trainable launcher for Italian Sea Killer Mk 2 anti-ship missiles:

Length: 4.70 m Diameter: 20.6 cm Span: 99.9 cm (cruciform)

Range: 25 km Speed: 300 m/sec.

Guidance: beam-rider/command with optical

Engine: 100 kg-thrust solid-fuel with 4,400-kg

Weight: . . . thrust solid booster Also used are Short Bros. & Harland Sea Cat short-range SAMs. Guns and torpedoes

are of U.S., Italian, Swedish, and British origin. Only a dozen of U.S. Harpoon missiles were supplied, and all are believed to have been expended or are unserviceable.

Note: Although reporting on the current conflict between Iran and Iraq seems anything but accurate, the following ships appear to have been lost:

- ◆ 2 U.S. PF 103-class frigates, with another possibly lost in 1983
- 2 Combattante II-class guided-missile patrol boats (including Peykan)
- 5 patrol boats

1981

· 4 mine countermeasures ships

The two Combattante II class and one of the PF 103 class were sunk by AM 39 Exocet missiles launched from Super Frélon helicopters.

Note: The U.S. Tang-class submarine Kusseh (ex-Trout, SS 566) was abandoned at Norfolk, Virginia, in 5-79. In 11-82 the Ayatollah Khomeini announced that he wished to renew the canceled 1978 contract for 6 West German Type 209 submarines; the West German government was still deciding its position as of 6-85.

GUIDED-MISSILE DESTROYERS

1 ex-British Battle class

Bldr: Cammell Laird, Birkenhead

51 ARTEMIZ (ex-Sluys, D 60)

Laid down 24-11-43

In serv.

L 28-2-45 30-9-46



Artemiz (D 51) - wearing old number

Thornycroft, 1969

D: 2,325 tons (3,360 fl) S: 31 kts Dim: 115.32 (108.2 pp) × 12.95 × 5.2 (fl) A: 4/Standard SM-1 MR SAM box launchers (8 missiles) - 4/114-mm DP $(II \times 2, fwd) - 4/40$ -mm AA $(I \times 4) - 1/Sea$ Cat SAM $(IV \times 1) - 1/Squid$ ASW mortar (III × 1)

Electron Equipt: Radar: 1/Decca . . . nav., 1/Plessey AWS-1 air-search, 1/Contraves Sea Hunter RTN-10X fire-control Sonar: Plessey MS-26—EW: 1 Decca RDL-1

M: 2 sets Parsons GT; 2 props; 50,000 hp Boilers: 2 Admiralty 3-drum Fuel: 680 tons Range: 3,200/20 Man: 260 tot.

Remarks: Modernized before transfer on 20-1-67. Anti-ship missiles added after refit in South Africa, 1975-76. Sea Cat system NSCS optical director only. Standard missiles are SAM version, vice SSM, using Sea Hunter for fire control. Reported sunk 1983, but appears to still exist, although only marginally operable.

2 ex-U.S. Allen M. Sumner, FRAM II, class

Laid down In serv. 61 Babr (ex-Zellars, DD 777) Todd, Pacific 24-12-43 19-7-44 25-10-44 62 Palang (ex-Stormes, DD 780) Federal SB, Kearny 25-2-44 4-11-44 27-1-45



Palang (D 62) - old number - forward box-launcher raised

1975

D: 2,200 tons (3,320 fl) S: 30 kts Dim: 114.75 × 12.45 × 5.6

A: 4/Standard SM-1 MR SAM box-launchers (8 missiles) — 4/127-mm DP (II × 2) − 6/324-mm Mk 32 ASW TT (III × 2) − 2/Hedgehogs − 1/AB-204 helicopter

Electron Equipt: Radar: 1/SPS-10, 1/SPS-29, 1/Mk 25 Sonar: 1/SQS-29-EW: WLR-1, ULQ-6

M: 2 sets GT; 2 props; 60,000 hp

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm2, 454°C Fuel: 650 tons

Range: 1,260/30; 4,600/14 Man: 14 officers, 260 men

Remarks: Purchased in 3-71 and delivered in 10-73 and 1974. The Bordelon (DD 881) and the Kenneth D. Bailey (DD 713) were transferred for cannibalization. The Standard missile launchers are on a platform between the stacks and also on the 01 level forward of the bridge. Mk 37 fire control for the 127-mm guns. VDS now removed from the Babr. Both believed to be inoperable.

FRIGATES

• 4 Saam (Vosper Mk 5) class

| | Ø -5 | | | |
|-------------|--------------------|-----------|---------|----------|
| | Bldr | Laid down | L | In serv. |
| 71 SAAM | Vosper Thornycroft | 22-5-67 | 25-7-68 | 20-5-71 |
| 72 ZAAL | Vickers, Newcastle | 3-3-68 | 25-7-68 | 1-3-71 |
| 73 Rostam | Vickers, Barrow | 10-12-67 | 4-3-69 | 28-2-72 |
| 74 FARAMARZ | Vosper Thornvcroft | 25-7-68 | 30-7-69 | 28-2-72 |

D: 1,250 tons (1,540 fl) S: 40/30 kts (17.5 with diesel)

Dim: $94.5 (88.4 \text{ pp}) \times 11.07 \times 3.25$

A: 1/Sea Killer SSM system (V × 1) − 1/Sea Cat SAM system (III × 1) 1/114-mm DP Mk 8-2/35-mm AA (II \times 1) -1/Limbo Mk 10 ASW mortar

Electron Equipt: Radar: 1/Plessey AWS-1 air-search, 2/Contraves Sea Hunter RTN-10X fire control

EW: Decca RDL-1 intercept



Zaal (F 72)

1977

M: CODOG: 2 Rolls-Royce Olympus TM3A gas turbines; 2 Paxman 16-cyl. Ventura diesels for cruising; 2 CP props; 46,000 hp (turbines), 3,800 hp (diesels) Fuel: 150 tons (250 with overload) Range: 5,000/15

Man: 135 tot.

Remarks: Air-conditioned. Retractable fin stabilizers. All now carry Mk 8 guns in place of original Mk 6. Normally carry only 3 Sistel Sea Killer missiles. One or two believed to be operable, but status of combat systems uncertain.

♦ 1 or 2 U.S. PF 103 class (see remarks)

Bldr: Levingston SB, Orange, Texas

Laid down In serv. 81 BAYANDOR (ex-PF 103) 20-8-62 7-7-63 18-5-64 82 Naghdi (ex-PF 104) 12-9-62 10-10-63 22-7-64

D: 900 tons (1,135 fl) S: 20 kts Dim: 83.82 × 10.06 × 3.05 (4.27 sonar) A: 2/76.2-mm DP (I × 2) - 2/40-mm AA (II × 1) - 2/23-mm AA (II × 1) -4/d.c. projectors - 2/d.c. racks

Electron Equipt: Radar: 1/SPS-6, 1/Raytheon navigational, 1/Mk 34 Sonar: SQS-17A

M: 4 Fairbanks-Morse 38D81/6-10 diesels; 2 props; 5,300 hp

Electric: 750 kw

Fuel: 110 tons Range: 2,400/18; 3,000/15

Man: 133 tot.

Remarks: Transferred under the Military Aid Program. Twin Soviet 23-mm AA have been added forward of the bridge in place of the single Hedgehog ASW mortar. Mk 63 GFCS for 76.2-mm guns (radar on fwd gunmount); Mk 51 Mod. 2 GFCS for 40-mm mount. Sisters Milanian (83, ex-PF 105) and Kahnamuie (84, ex-PF 106) reported lost to Iraqi forces by 1982, with a third reported lost in 1983.

PATROL BOATS

♦ 11 Combattante-II class Bldr: Constr. Méc. de Normandie, Cherbourg

| | L | In serv. | | L | In serv. |
|----------------|---------|----------|-----------------|----------|----------|
| P 221 Kaman | 8-1-76 | 6-77 | P 228 Gorz | 28-12-77 | 15-9-78 |
| P 222 ZOUBIN | 14-4-76 | 6-77 | P 229 GARDOUNEH | 23-2-78 | 23-10-78 |
| P 223 KHADANG | 15-7-76 | 15-3-78 | P 230 Khanjar | 27-4-78 | 1-8-81 |
| P 225 Joshan | 21-2-77 | 31-3-78 | P 231 NEYZEH | 5-7-78 | 1-8-81 |
| P 226 FALAKHON | 2-6-77 | 31-3-78 | P 232 TABARZIN | 15-9-78 | 1-8-81 |
| P 227 SHAMSHIR | 12-9-77 | 31-3-78 | | | |



Zoubin (P 222)

CMN, 1977



Khadang (P 223) - with 4 Harpoon launchers

1978

D: 249 tons (275 fl) S: 36 kts Dim: 47.0 × 7.1 × 1.9 A: 1/76-mm OTO Melara DP - 1/40-mm AA

Electron Equipt: Radar: 1/Decca 1226, 1/H.S.A. WM-28 EW: TSF TMV-433 suite: DR-2000 receiver, DALIA analyzer, Alligator 5-A jammer

PATROL BOATS (continued)

M: 4 MTU 16V538 TB91 diesels; 4 props; 14,400 hp Electric: 350 kw Fuel: 41 ton Range: 700/33.7s Man: 31 tot.

Remarks: Contracted 19-2-74 and 14-10-74. The last three were embargoed at Cherbourg 4-79 and released 22-6-81. P 232 captured off Spain 13-8-80 by anti-Khomeini forces but abandoned later at Toulon. P 231 and 232 had no Harpoon Tubes on delivery, and all missiles delivered by the U.S. are believed to have been expended. Two, including Peykan (P 224), reported lost to Iraqi forces 11-80.

1 U.S. Coast Guard Cape class
 Bldr: U.S. Coast Guard, Curtis Bay, Md. (In serv. 1956-59)

P 201 KEYVAN

D: 85 tons (107 fl) S: 20 kts Dim: 29.0 × 6.2 × 2.0

A: 1/40-mm AA - 2/Mk 22 Mousetrap ASW RL - 2/d.c. racks

M: 4 Cummins VT-12-M700 diesels; 2 props; 2,200 hp Electric: 40 kw

Range: 1,500/15 Man: 15 tot.

Remarks: Sisters Mehran (P 203) Mahvan (P 204) and Tiran (P 202) lost 1980-83, as were the three U.S. PGM 71-class patrol boats Parvin (P 211), Bahram (P 212), and Nahid (P 213).

MINE WARFARE SHIPS

♦ 1 ex-U.S. Falcon-class minesweeper Bldr: Peterson (L: 1958)

301 Sнанкокн (ex-MSC 276)

D: 320 tons (378 fl) S: 12.5 kts (8, sweeping)

Dim: $43.0 (41.5 \text{ pp}) \times 7.95 \times 2.55$

A: 2/20-mm AA (II × 1)

Electron Equipt: Radar: 1/Decca 707 Sonar: UQS-1 M: 2 G.M. 8-268A diesels; 2 props; 890 hp Fuel: 27 tons

Range: 2,500/10 Man: 3 officers, 35 men

Remarks: Sisters Shabaz lost through fire in 1975, Simorgh (302) and Karkas (303) to Iraqi forces 1980-81.

AMPHIBIOUS WARFARE SHIPS

♦ 4 (+2) Hengam-class LSTs Bldr: Yarrow & Co., Scotstoun

| | L | In serv. | | L | In serv. |
|------------|---------|----------|-----------|---------|----------|
| 511 HENGAM | 27-9-73 | 12-8-74 | 513 LAVAN | 12-6-78 | 16-1-85 |
| 512 Larak | 7-5-74 | 12-11-74 | 514 Tonb | 6-12-79 | 7-85 |



Larak (512) - wearing old number

1976



Tonb (514) - laid up at builders

L. & L. Van Ginderen, 8-82

D: 2,940 tons (fl) S: 14.5 kts
 Dim: 92.96 (86.87 wl) × 14.94 × 3.00 max.
 A: 4/40-mm Bofors AA (I × 4)
 Electron Equipt: Radar: 1/Decca TM 1229
 M: 511, 512: 4 Paxman Ventura 12 YJCM diesels; 2 CP props; 5,600 hp
 513, 514: 4 MTU 12V562 TB61 diesels; 2 CP props; 5,800 hp

Range: 3,500/12 Fuel: 295 tons Electric: 1280 kw

Man: 75 crew + 168 troops

Remarks: 513, 514, laid up since completion, were released by the British Government 5-10-84 on the excuse that they would be used in the unlikely role of hospital ships; delivered without armament. Negotiations continued into 1985 for the construction of two more, originally ordered 7-77, for which considerable material had been accumulated.

Flight deck for one Sea-King-sized helicopter aft. Cargo capacity of 600 tons on $39.6\times8.8\times4.5$ m (high) vehicle deck, with 15-m-long bow ramp. Can also carry up to 300 tons liquid cargo in lieu of some vehicle stowage. Can stow 12 Soviet T-55 or 6 British Chieftain battle tanks. Upper deck forward has a 10-ton crane to handle two Uniflote cargo lighters (LCVP) and twelve Z-boat rubber personnel landing craft. Intended for logistics support (when ten 20-ton or thirty 10-ton containers would be carried) or for amphibious assault. Magazines hold 8,000 rounds 40-mm; guns are locally controlled. 513 has an additional Decca 1216 nav. radar. 513 and 514 have a U.S. URN 25 TACAN system.

4 medium landing ships Bldr: Ravenstein SY, Deest, Netherlands (In serv. 1-84)

21 N. . . 22 Iran Hormuz . . . N. N. . .

D: . . . S: 9 kts Dim: 65.03 (58.43 pp) × 12.01 × 2.60

A: . . . Electron Equipt: Radar: 1/. . . nav. M: 2 M.A.N. V12V-12.5/14 diesels; 2 props; 730 hp

Man: . . .

Remarks: 906 grt/750 dwt. Delivered via U.K. as merchant ships, but bore naval pendants. Cargo capacity about 600 tons. Freight-barge design, with bow ramps. Second pair reported delivered in Iran 21-10-85.

HOVERCRAFT

♦ 6 BH.7 Wellington class Bldr: British Hovercraft, Cowes, U.K. (In serv. 1970-75)

101 to 106

D: 50 to 55 tons (fl) S: 65 kts Dim: 23.9 × 13.8 × 10.36 (high)

A: Several mg Electron Equipt: Radar: 1/Decca 914

M: 1 Rolls-Royce Proteus 15M549 gas turbine; 1 6.4-m diameter prop; 4,250 hp Electric: 110 kVA Fuel: 9 tons Range: 400/56

Remarks: Four are of the logistics-support version, with a 14-ton payload. Two are of the Mk 4 version with recess for two SSM, which were not mounted. The Mk 4 uses the Gnome 15M541 engine of 4,750 hp and can carry 60 troops in side compartments as well as assault vehicles on its 56-m² cargo deck. Speed in both versions is reduced to 35 kts in a 1.4-meter sea. Overhauled at builders beginning with two in 2-84 and two more in 1985; new engines, skirts, etc.

• 8 SR-N6 Winchester class Bldr: British Hovercraft (In serv. 1973-75)

01 to 08

D: 10 tons S: 52 kts Dim: 14.8 × 7.7 × 3.8 (high)

A: 1/7.6-mm mg M: 1 Gnome Mk 1050 gas turbine Range: 110/30

Remarks: Probably inoperable.

AUXILIARY SHIPS

• 1 large replenishment oiler

Bldr Laid down L In serv.
431 Kharg Swan Hunter, Wallsend 1-76 3-2-77 25-4-80



Kharg (431)

French Navy, 1985

D: 33,014 tons (fl) S: 21.5 kts Dim: 207.15 (195.00 pp) × 25.50 × 9.14

A: 2/40-mm AA (I × 2) - 3 helicopters

M: 1 set Westinghouse GT; 1 prop; 26,870 hp Electric: 7,000 kw

Boilers: 2 Babcock & Wilcox 2-drum Man: 248 tot.

Remarks: Ordered 10-74. 21,100 grt/20,000 dwt. Carries fuel and ammunition. Design is greatly modified version of the Royal Navy's Olwen class. Ran initial trials 11-78, but delays in fitting-out made delivery before the revolution impossible; remained at builders until released 5-10-84; ran trials again 4-9-84. Has U.S. URN-20 TACAN equipment. Delivered without armament; originally had an OTO Melara 76-mm Compact forward. One 40-mm AA was installed on the former 76-mm pedestal, the other on the helo deck—which should inhibit flight operations.

◆ 2 Bandar Abbas-class small replenishment oilers Bldr: C. Lühring, Brake, West Germany

422 Bandar Abbas (L: 14-8-73) 441 Booshehr (L: 22-3-74)

D: 5,000 tons (fl) S: 15 kts Dim: 108.0 × 16.6 × 4.5

A: 2/40-mm AA (I × 2) — 1/helicopter M: 2 M.A.N. diesels; 2 props; 6,000 hp Man: 60 tot.

AUXILIARY SHIPS (continued)



Booshehr (441) - composite photo

G. Koop, 1974

Remarks: 3,250 dwt. Telescoping hangar. Carry fuel, food, ammunition, and spare parts. Armed after delivery. Used for patrol duties 1984-on, due to lack of operable combatants.

2 water tankers

Bldr: Mazagon Dock, Bombay, India

411 KANGAN (L: 4-78)

412 Taheri (L: 17-9-78)



Kangan (411)

1979

D: 12,000 tons (fl) S: 12 kts Dim: 147.95 (140.0 pp) × 21.5 × 5.0 M: 1 M.A.N. 7L52/55A diesel; 7,385 hp

Remarks: 9,430 dwt. Intended to supply Arabian Gulf islands. Liquid cargo: 9,000 m³.

◆ 1 U.S. 174-foot-class water tanker

Bldr: Zenith Dredge, Duluth, Minn.

Laid down

In serv.

46 LENGEH (ex-U.S. YW 88)

18-3-43

18-5-43

D: 440 tons light (1,390 fl) S: 10 kts Dim: 53.04 × 10.01 × 4.27 M: 2 Union diesels; 2 props; 580 hp Electric: 80 kw Fuel: 25 tons

Man: 22 tot.

Remarks: Purchased in 1964. Cargo: 930 tons.

• 1 ex-U.S. Amphion-class repair ship

Bldr: Tampa SB, Florida

Laid down

In serv.

CHAH BAHAR (ex-Amphion, AR 13) 15-5-45

20-9-44

T. 30-1-46

D: 8,670 tons light (14,450 fl) S: 16 kts Dim: 150.0 × 21.4 × 8.4

A: 2/76.2-mm DP (I × 2) M: 1 set GT; 1 prop; 8,500 hp Electric: 3,600 kw

Boilers: 2 Foster-Wheeler "D"; 30.6 kg/cm2, 382°C Fuel: 1,850 tons

Man: Quarters for 921 men

Remarks: Transferred in 10-71. Primarily stationary, but can steam.

 1 former imperial yacht for Caspian Sea Bldr: Boele's SW, Bolnes, The Netherlands

D: 530 tons **S**: 15 kts **Dim**: $53.0 \times 7.65 \times 3.2$

M: 2 Stork diesels; 2 props; 1,300 hp

◆ 1 former imperial yacht for Arabian Gulf Bldr: Burmester, W. Germany (In serv. 1970)

D: 175 tons Dim: 37.0 × 7.6 × 2.2 M: 2 MTU diesels; 2 props; 2,920 hp

YARD AND SERVICE CRAFT

2 barracks ships

Bldr In serv. MICHELANGELO Ansaldo 9-62 RAFFAELLO CRDA, Monfalcone 7-7-65 . . .

D: 42,000 tons (fl) S: 29 kts Dim: 275.8 (244.0 pp) × 31.0 × 9.3 M: 4 sets GT; 4 props; 65,000 hp Boilers: 4 Foster-Wheeler

Remarks: Former cruise liners, purchased 12-12-76. Arrived July/August 1977 at Bandar Abbas for use as floating barracks for Iranian naval personnel and their families. Retain original names. Raffaello seriously damaged by Iraqi missile, 20 or 21-11-82.

• 2 harbor tugs

Bldr In serv. HAMOON Deltawerf, Sliedrecht, Neth. 4-84 HIRMAND Damen, Hardinxveld, Neth. 1 - 8 - 84

D: 300 tons (fl) S: 12 kts Dim: 23.63 (23.53 pp) × 6.81 × 3.19

M: 2 MTU GV396 TC62 diesels; 2 props; 1,200 hp

Remarks: 122 grt.

• 1 ex-U.S. Army tug

45 Bahman Shir (ex-ST 1002)

D: 150 tons

REMARKS: Transferred in 1962.

* 2 ex-German tugs

1 (ex-Karl) 2 (ex-Ise)

D: 134 tons

REMARKS: Built in 1962-63, and transferred 17-6-74.

 2 ammunition lighters Bldr: Karachi SY & Eng. Wks. (In serv. 1978)

481 N. , 482 Chiroo

D: 840 grt S: 11 kts Dim: 64.0 × 10.5 × 3.2 M: 2 M.A.N. G6V-23.5/33ATL diesels; 2 props; 1,560 hp

Bldr: Karachi SY & Eng. Wks (In serv. 1977-78) 2 water barges

1702

D: 1,410 grt Dim: 65.0 × 13.0 × 2.6

• 2 large fuel lighters Bldr: Karachi SY & Eng. Wks (In serv. 1981)

1718 DAYERE N. DAYLAM

D: 1,300 tons (fl) S: 9 kts Dim: 63.45 (58.48 pp) × 11.00 × 3.03 Man: 2 M.A.N. diesels; 2 props; 1,560 hp

Remarks: 933 grt/850 dwt

• 2 small fuel lighters Bldr: Karachi SY & Eng. Wks. (In serv. 1981)

1704 N. 1703 N.

. S: . . . Dim: 30.51 × 9.30 × 1.83 M: 2 M.A.N. diesels; 2 props; 326 hp

REMARKS: 195 grt/200 dwt.

Note: In addition to the eight units immediately above, Karachi Shipyard and Engineering Works delivered 10 other yard and service craft between 1977 and 7-81. All were designed in Great Britain. A variety of craft were built, all initially numbered 1701 through 1718. Types included a self-propelled dredge, (1711), a pontoon barge (1710), a diving tender (1705), and garbage lighter (120 m3 hopper with compacter). Two cargo lighters were reportedly similar to the ammunition lighters described

♦ 1 modified U.S. 174-foot-class yard oiler Bldr: Nav. Mec. Castellammare (In serv. 2-56)

43 Hormuz (ex-U.S. YO 247)



Hormuz (43)

1974

D: 1,400 tons (fl) S: 9 kts Dim: 54.4 × 9.8 × 4.3

A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca 707

M: 1 Ansaldo Q370 diesel; 600 hp Fuel: 25 tons

Remarks: Built under U.S. Military Aid Program. Cargo: 900 tons

Bldr: Pacific Bridge, Alameda, Cal. (In serv. 7-44) 1 floating dry dock 400 (ex-ARD 28)

D: 3,500 tons lift Dim: 149.8 × 25.6 × 1.7 (light)

REMARKS: Transferred 1-3-77.

IRAN (continued)

COAST GUARD

PATROL CRAFT

 up to 81 U.S. 50-ft. class Bldr: Peterson Bldrs., Sturgeon Bay, Wisc. (In serv. 1975-78)

D: 22 tons (fl) S: 28 kts Dim: 15.24 × 4.80 × 1.9

A: 1/12.7-mm mg Range: 500/30

M: 2 G.M. 8V71 TI diesels; 3 props; 850 hp Man: 6 tot.

REMARKS: Twenty were ordered in 1973 and 61 more in 1976. Shipped as kits for assembly in Iran, at Boghammar, where they were still being assembled into the 1980s. Some have probably been lost.

 ◆ 20 U.S. Swift Mk II class Bldr: Peterson Bldrs., Sturgeon Bay, Wisc. (In serv. 1976-77)

1201 to 1220

D: 22 tons (fl) S: 26 kts Dim: 15.3 × 4.8 × 1.9

A: None M: 2 G.M. 12V71 diesels; 2 props; 900 hp Man: 6 tot.

Remarks: Equipped to carry extra personnel and have no fixed armament.

* 6 U.S. 40-foot class Bldr: Sewart Seacraft, Louisiana (In serv. 1963)

MAHMAVI-HAMARAZ MAHMAVI-VANEDI MORDARID MAHMAVI-TAHERI MARDJAN SADAF

D: 10 tons S: 30 kts Dim: 12.2 × 3.4 × 1.1

A: 2/7.62-mm mg M: 2 G.M. diesels; 2 props; 600 hp

REMARKS: Four given to Sudan in 1978, two stricken.

◆ 40+ U.S. Bertram Enforcer harbor patrol craft Dim: 9.5 and 6.1 oa

Bldr: Fairey Marine, Hamble (In serv. ♦ 10 Medina-class motor lifeboats 1978)

1601 to 1610

D: 15.5 tons (fl) S: 16 kts Dim: 14.0 × 3.7 × 1.1

M: 2 Ford Sabre Turbo-Plus diesels; 2 props; 500 hp Range: 150/12

Man: 4 tot. (plus 12 passengers)

Personnel (1984): about 3,000 men, including 400 officers

Merchant Marine (1984): 153 ships-1,073,871 grt (tankers: 28 ships-797,055 grt)

NAVAL AVIATION: The Air Force operates eight French-supplied Super Frélon helicopters, armed with AM 39 Exocet anti-ship missiles, and in 10-83 France loaned 5 Super Étendard fighter-bombers with AM 39 missiles; returned 10-85. Some of the newly delivered 83 Mirage F.1EQ fighter-bombers also carry AM 39. Five Agusta AB 212 and an unspecified number of A 103A helicopters were ordered 1984.

Note: Losses to date during the war with Iran reportedly include:

4 Osa II-class guided-missile patrol boats (two to Iranian naval ships and two to

• 6 P 6-class torpedo boats

◆ 1 Polnocny-C-class landing ship

◆ 2 (+2) Italian Lupo class Bldr: CNR, Ancona (A) and Riva Trigoso (B)

| | Yard | Laid down | L | In serv. |
|--------------|------|-----------|---------|----------|
| HITTIN | A | 31-3-82 | 27-7-83 | 3-85 |
| TMI QAR | A | 9-82 | 31-3-84 | -85 |
| AL QADISSIYA | В | 15-4-83 | | |
| AL YARMOOK | A | 12-3-84 | 18-4-85 | 9.10 |

D: 2,213 tons (2,525 fl) S: 35 kts (20.5 diesel)

Dim: 112.8 (106.0 pp) \times 11.98 \times 3.84 A: 8/Otomat Mk II SSM (I \times 8) — 1/Albatros SAM syst. (VIII \times 1; no reloads) 1/127-mm DP OTO Melara - 4/40-mm AA Breda Dardo (II × 2) -6/324-mm ASW TT (III × 2) - 2/AB 212 ASW helicopters

Electron Equipt: Radar: 1/3RM20 navigational, 1/RAN-11X surf./air search, 1/RAN-10S air search, 2/Orion RTN-10XRCT f.c., 2/ Orion RTN-20X f.c.

Sonar: Edo 610E or Raytheon 1160B

EW: Lambda F passive syst. -2/SCLAR chaff RL

M: CODOG: 2 Fiat/G.E. LM-2500 gas turbines (25,000 hp each); 2 GMT A230-20M diesels (3,900 hp each); 2 CP props

Electric: 4,000 kVA Range: 900/35; 3,450/20.5 Man: 185 tot.

REMARKS: Ordered 2-81, 127-mm gun and SAM fire control by two Elsag Mk 10 Mod. 0 systems with NA-10 radar directors; 40-mm f.c. by two Dardo systems. Selenia

IPN-10 combat data system. SAM system will use Aspide missiles rather than NATO Sea Sparrow. Fin stabilizers fitted. Fixed hangar, as on Venezuelan and Peruvian units of the class, to which this version will in other ways be similar. U.S. objection to the sale of major components of the LM-2500 gas turbines was overcome. Hittin delivered 11-84, commissioned 3-85, but had not sailed for Iraq by 6-85.

Bldr: Uljanic SY, Yugoslavia ♦ 1 training frigate

Laid down In serv. 507 IBN KHALDUM 1977 1978 21-3-80



Ibn Khaldum (507)

D: 1,850 tons (fl) S: 26 kts Dim: 96.7 × 11.2 × 3.55

A: 1/57-mm Bofors SAK 57 AA - 1/40-mm AA - 8/20-mm AA (II × 4) - 1/d.c. rack

Electron Equipt: Radar: 2/navigational, 1/surface search, 1/Phillips 9LV200 Mk II f.c.

Sonar:

M: CODOG: 1 Rolls-Royce Olympus TM-3B gas turbine, 22,360 hp; 2 MTU 16V956 TB61 diesels, 7,500 hp; 2 CP props

Range: 4,000/20 (diesels) Man: 93 men + 100 students

REMARKS: Same basic design as the ship laid down in 1979 for Indonesia. To provide experience in operating larger ships for future expansion of the Iraqi fleet and has served as a transport during the Iranian war. No helicopter facilities.

GUIDED-MISSILE CORVETTES

◆ 3 (+1) modified Wadi M'ragh class Bldr: Breda SY, Venezia: Mestre (A) or Marghera (B) yard

| | Laid down | L | In serv. | Yard |
|---------------------------|-----------|---------|----------|------|
| 211 ABDULLAH BEN ARI SERH | 22-3-82 | 5-7-83 | | A |
| 213 KALID IBN AL WALID | 3-6-82 | 5-7-83 | | A |
| 214 SAHIB IBN ALI WAKKAD | 17-8-82 | 2-12-83 | | В |
| 215 SAHIR AL DIN ALYOOBI | 17-9-82 | 30-3-84 | | В |

D: 600 tons (675 fl) S: 37.5 kts Dim: 62.3 (57.8 pp) × 9.3 × 2.8 (hull)

A: 6/Otomat Mk II SSM (III \times 2) — 1/Albatros SAM system (IV \times 1, plus 3 reload Aspide missiles) — 1/76-mm OTO Melara DP — 2/40-mm Breda Dardo AA (II \times 1) -6/324-mm ILAS-3 ASW TT (III \times 2)

Electron Equipt: Radar: 1/3RM 20, 1/RAN-12 L/X, 1/Orion RTN-10X Sonar: Diodon

EW: Electronica Gamma syst., 2/SCLAR chaff RL (XX × 2)

M: 4 MTU 20V956 TB92 diesels; 4 props; 24,400 hp (20,400 sust.)

Electric: 650 kw Fuel: 126 tons Range: 1,200/31; 4,000/18 Man: 51 tot.

Remarks: Ordered 2-81. Attack variant of leader version listed below. Aspide reload via manual crane. Selenia IPN-10 data system with 2 radar directors and 2 CO3 optical directors for guns. Will probably exceed 700 tons displacement by completion.

◆ 2 helicopter-equipped Bldr: CNR, Muggiano

| | Laid down | L | In serv. |
|-------------------------|-----------|---------|----------|
| F 210 Mussa Ben Mussair | 15-1-82 | 4-12-82 | 8-84 |
| F 919 TARIO IRN ZIAD | 20-5-82 | 8-7-83 | 3-85 |

D: 610 tons (685 fl) S: 37.5 kts Dim: 62.3 (57.8 pp) × 9.3 × 2.9 (hull)

A: 2/Otomat Mk II SSM (I × 2)-1/Albatros SAM syst. (IV × 1, plus 4 reload Aspide missiles) - 1/76-mm OTO Melara DP - 6/324-mm ILAS-3 ASW TT (III × 2) −1/A 109A helicopter

Electron Equipt: Radar: 1/3RM 20, 1/RAN-12L/X, 1/Orion RTN-10X

Sonar: Diodon

EW: Electronica Gamma syst., 1/SCLAR chaff RL (XX × 1)

Remarks: Remaining data as per attack version above. Telescopic hangar for the helicopter.

GUIDED-MISSILE PATROL BOATS

♦ 6 Soviet Osa-II class

D: 210 tons (240 fl) S: 36 kts Dim: 38.6 × 7.6 × 2.0

A: 4/SS-N-2B Styx (I × 4) - 4/30-mm AA (II × 2)

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole A

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Two transferred in 1974 and two in each year through 1977. Four reported lost 1980-81. Two replacements delivered 11-84.

GUIDED-MISSILE PATROL BOATS (continued)

4 Soviet Osa-I class

D: 180 tons (215 fl) S: 36 kts Dim: 38.6 × 7.6 × 1.8

A: 4/SS-N-2 Styx -4/30-mm AA (II \times 2)

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole A

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Two transferred 1971-72, two in 1973, and two in 1974. Of these, two have been "retired from service."

Note: Names reported for both OSA-I and OSA-II craft include: Al Walid, Hazirani, Kanun Ath-Tani, Khalid Ibn, Nisan, Sa'd and Tamuz.

TORPEDO BOATS

• 4 ex-Soviet P 6 class

D: 65 tons (66.5 fl) **S:** 43 kts **Dim:** $25.3 \times 6.1 \times 1.7$

A: 4/25-mm AA (II \times 2) -2/533-mm TT (I \times 2)

Electron Equipt: Radar: Pot Head

IFF: 1/Dead Duck, 1/High Pole A

M: 4 M50 diesels; 4 props; 4,800 hp Range: 650/26 Man: 2 officers, 12 men

Remarks: Two transferred 1959, four in 11-60 and six in 1-61. Six have reportedly been lost to Iranian forces, including some to Harpoon missiles. Rest probably inoperable.

PATROL BOATS AND CRAFT

* 3 ex-Soviet S.O.-1 class

210 211 212

D: 190 tons (215 fl) **S:** 28 kts **Dim:** $42.0 \times 6.1 \times 1.9$

A: 4/25-mm AA (II × 2-4/RBU-1200 ASW RL (V × 4)-2/d.c. racks-mines

Electron Equipt: Radar: 1/Pot Head Sonar: high-frequency

M: 3 Type 40D diesels; 3 props; 7,500 hp Range: 340/28; 1,920/7

Man: 3 officers, 27 men

Remarks: Delivered in 1962. Probably in only marginal operating condition.

• 5 Soviet Zhuk class

D: 50 tons (60 fl) **S:** 34 kts **Dim:** $24.0 \times 5.0 \times 1.8$ (props)

A: 4/14-mm AA (II × 2) Electron Equipt: Radar: 1/Spin Trough

M: 2 M50 diesels; 2 props; 2,400 hp

Remarks: Transferred in 1975.

• 2 Soviet Poluchat-I class

D: 80 tons (90 fl) S: 18 kts Dim: 29.6 × 6.1 × 1.9 (props)

A: 2/14.5-mm AA Electron Equipt: Radar: 1/Spin Trough

M: 2 M50 diesels; 2 props; 2,400 hp Range: 450/17; 900/10 Man: 20 tot.

Remarks: Transferred in 1966. May in fact be torpedo-recovery versions of the Poluchat class.

MINE WARFARE SHIPS

♦ 2 Soviet T-43-class fleet minesweepers

465 AL YARMOUK 467 AL KADISIA

D: 500 tons (570 fl) **S:** 14 kts **Dim:** $58.0 \times 8.6 \times 2.3$

A: 4/37-mm AA (II \times 2) -8/12.7-mm mg (II \times 4) -2/d.c. projectors — mines

Electron Equipt: Radar: 1/Ball End - IFF: 1/Square Head, 1/High Pole A

M: 2 Type 9D diesels; 2 props; 2,200 hp Range: 3,200/10

Remarks: Transferred in 1969.

• 3 Yevgenya-class inshore minesweepers

D: 80 tons (90 fl) **S**: 11 kts **Dim**: $26.2 \times 6.1 \times 1.5$ **A**: 2/25-mm AA (II \times 2)

Electron Equipt: Radar: 1/Spin Trough M: 2 diesels; 2 props; 600 hp Range: 300/10

REMARKS: Transferred in 1975 as "oceanographic research craft." Have heavier guns than their Soviet Navy sisters.

♦ 4 Yugoslav Nestin-class river minesweepers Bldr: Brodotehnika, Belgrade

D: 66 tons (78 fl) S: 15 kts Dim: 27.0 × 6.5 × 1.15

A: 5/20-mm AA (III × 1, I × 2) - 24 mines

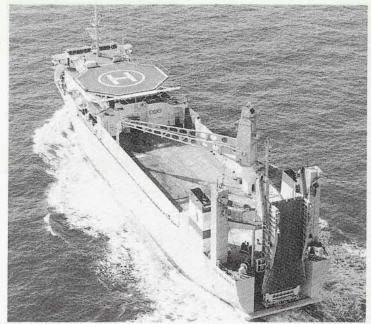
M: 2 diesels; 2 props; 520 hp Range: 860/11 Man: 17 tot.

Remarks: Transferred 1978-79. Have acoustic, magnetic, and mechanical sweep gear.

AMPHIBIOUS WARFARE SHIPS

• 3 modified roll-on/roll-off cargo ships Bldr: Helsingor Vaerft, Denmark

| | Laid down | L | in serv. |
|---------------|-----------|---------|----------|
| 426 AL ZAHRAA | 7-7-81 | 19-3-82 | 18-3-83 |
| 428 KHAWLA | 19-11-81 | 8-82 | 7-83 |
| 429 Balquses | 21-4-82 | 11-82 | 10-83 |



Al Zahraa (426)

MacGregor-Navire, 1983

D: 5,800 tons (fl) S: 15.5 kts Dim: 106.0 (96.1 pp) × 18.8 × 5.25 A: . . . M: 2 MTU 12V1163 TB62 diesels; 2 CP props; 6,000 hp Electric: 1,280 kw Man: 35 crew plus 250 troops

Remarks: 3,681 grt/3,500 dwt. Modified vehicle cargo ship design with military features. 880m² vehicle cargo space. Slewing ramp aft can handle 55-ton tanks or place tanks up to 41 tons in water. Side ramps with 50-ton capacity. Helicopter deck, 55-ton elevator to upper deck. 1,200-ton automated water ballast system.

♦ 3 Soviet Polnocny-C class

Bldr: Polnocny SY, Gdansk, Poland

D: 1,150 tons (fl) **S**: 18 kts **Dim**: $81.3 \times 10.1 \times 2.1$

A: 4/30-mm AA (II × 2) - 2/122-mm rocket launchers (XL × 2)

Electron Equipt: Radar: 1/Don-2, 1/Drum Tilt

M: 2 Type 40D diesels; 2 props; 5,000 hp Range: 900/17; 1,500/14

Remarks: Have a helicopter platform forward of the superstructure. Barrage rocket launchers differ from others of this class, which use 140-mm rockets. Two transferred in 1977, one in 1978, and one in 9-79. Names of first three: *Atika, Ganda,* and *Nouh.* One lost to Iranian Harpoon missiles, 1980-81.

AUXILIARY SHIPS AND CRAFT

• 1 Italian Stromboli-class replenishment oiler

Bldr Laid down L In serv.
A 102 Agnadeen Castellamare di Stabia, Naples 29-1-82 22-10-82 29-10-84



Agnadeen (A 102)

C. Martinelli, 12-83

D: 8,706 tons (fl) **S**: 19.5 kts (18 sust.) **Dim**: 129.0 (118.5 pp) \times 18.0 \times 6.5

A: 1/76-mm OTO Melara DP

Electron Equipt: Radar: 1/3RM7-250, 1/Orion RTN-10X

M: 2 GMT A428SS diesels; 1 CP prop; 11,200 hp (9,600 sust.) Electric: 4,200 kw Range: 10,000/16 Man: 124 tot.

Remarks: Ordered 2-81. Will probably be modified from the Italian Navy version as to cargo and equipment. Capable of serving two ships alongside while underway. Delivered 20-12-83 after fitting out at Muggiano, La Spezia. Had not sailed for Iraq as of 6-85.

◆ 1 Yugoslav Spasilac-class salvage ship

Bldr: Tito SY, Belgrade

A 51 Aka (In serv. 1978)

D: 1,590 tons (fl) **S:** 13.4 kts **Dim:** $55.50 \times 12.00 \times 4.34$

A: 4/14.5-mm mg (II × 2) M: 2 diesels; 2 props; 4,340 hp Man: 53 tot.

IRAQ (continued)

AUXILIARY SHIPS AND CRAFT (continued)

♦ 1 transport Bldr: Wärtsilä, Turku, Finland (In serv. 3-83)

AL MANSUR

D: . . . **S**: . . . **Dim**: $121.01 (96.50 \text{ pp}) \times 17.53 \times 5.51$

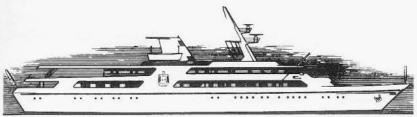
A: . . .

M: 2 diesels; 2 CP props; 11,994 hp Fuel: 693 tons

Remarks: 7,359-grt troop transport with helicopter deck, hangar. Light armor on hull sides, bulletproof portholes.

♦ 1 presidential yacht Bldr: Elsinore SB & Eng., Denmark

QADISSAYAT SADDAM (L: 10-80; In serv. 1981)



Qadissayat Saddam - artist's rendering

Elsinore SY, 1980

D: 1,660 tons (fl) S: 19.3 kts Dim: 82.00 × 13.00 × 3.30 M: 2 MTU 12V1163 TB82 diesels; 2 CP props; 6,000 hp Electric: 1,095 kVA

Remarks: 2,282 grt. Can carry 56 passengers (74 additional on short cruises). Sperry retractable fin stabilizers. 300-hp bow-thruster. Helicopter deck aft above swimming pool.

♦ 1 presidential barge Bldr: Elsinore SB & Eng., Denmark

N.

D: . . . S: . . . Dim: 67.0 × . . . × 1.2 M: . . .

Remarks: Ordered 1981. Luxurious barge-type yacht for use on the Tigris.

♦ 1 new-construction diving tender Bldr: Gorter, The Netherlands (In serv. 10-80

N.

D: 200 tons (fl) **S:** 15 kts **Dim:** 28.5 $(27.8 \text{ pp}) \times 6.4 \times 1.8$ **M:** 1 MTU 8V396 TC82 diesel; 1 prop; 870 hp

♦ 4 Soviet Nyryat-2-class diving tenders

D: 56 tons (fl) **S:** 12 kts **Dim:** $21.3 \times 3.8 \times 2.0$ **M:** 1 3D12 diesel; 300 hp Remarks: May also be used as tugs.

• 1 Soviet Pozharney-I-class fireboat

D: 180 tons (fl) S: 17 kts Dim: 35.0 × 6.2 × 2.0
M: 2 diesels; 2 props; 1,800 hp

♦ 1 Soviet Prometey-class tug Bldr: Okhtenskiy SY, Leningrad

D: 319 tons (fl) **S:** 12 kts **Dim:** 29.8 (28.2 pp) \times 8.3 \times 3.2

M: 26D30/50-4 diesels; 2 Kort-nozzle props; 1,200 hp Electric: 50 kw

Range: 1,800/12 Man: 3 tot.

Remarks: Delivered mid-1970s. Has firefighting monitor.

◆ 1 new-construction floating dry dock Bldr: Italcantiere, Trieste (In serv. 7-84)

Remarks: Ordered 2-81. 6,000-ton capacity. Still in Italy as of 6-85.

CUSTOMS SERVICE

◆ 1 yacht used as a pilot station (In serv. 1929)

AL THAWRA (ex-Malike Aliyah)

D: 746 tons S: 14 kts M: Diesels; 2 props; 1,800 hp

• 9 Tana-class pilot launches Bldr: Kone-Jyraa Oy, Jyvasky, Finland (In serv. 1980-81)

D: . . . S: 33 kts Dim: 9.45 × 2.44 × . . .

M: 2 MTU diesels; 2 props; . . . hp

Remarks: Delivery delayed by war.

♦ 8 pilot launches Bldr: Thornycroft, 1961-62

D: 10 tons S: . . . Dim: 11.0 × . . . × . . . M: 1 diesel; 125 hp

♦ 4 pilot launches Bldr: Thornycroft

Dim: 6.4 × . . . × . . . M: 40 hp

• 6 SR. Mk 6C-class hovercraft Bldr: British Hovercraft, Cowes

D: 17 tons **S:** 50 to 55 kts **Dim:** $18.3 \times 8.5 \times ...$

M: 1 Rolls-Royce Gnome gas turbine; 2 CP airscrews; 1,285 hp REMARKS: Ordered 1981. Six-ton payload; 6 to 11 hour endurance.

IRELAND

Eire

Personnel (1984): Approx. 800 active, plus 300 reserves

Merchant Marine (1984): 154 ships - 221,375 grt (7 tankers - 12,951 grt)

NAVAL AVIATION: The Irish Air Force operates 3 Beech A200 Maritime Patrol Aircraft.

Two longer-range maritime patrol aircraft are planned. Two Air Force-manned SA-365 Dauphin II helicopters were delivered in 1985.

FISHERIES-PROTECTION SHIPS

♦ 1 P 31 class Bldr: Verolme DY, Cork

Laid down L In serv. P 31 Eithne 15-12-82 19-12-83 7-12-84



Eithne (P 31)

Official, 1984

D: 1,760 tons (1,900 fl) **S:** 19 kts **Dim:** $81.0 \times 12.0 \times 4.30$

A: 1/57-mm Bofors SAK 57/70 Mk 1 DP — 2/20-mm Rheinmetall AA — 1/SA-365 Dauphin II helicopter

Electron Equipt: Radar: 1/Decca TM 1229C, 1/Decca AC 1629C, 1/H.S.A. DA-05/4

Sonar: Plessey PMS 26L

M: 2 Ruston Paxman 12RKCM diesels; 2 CP props; 7,200 hp (6,640 sust.) Electric: 1,625 kVA Range: 7,000/15 Man: 13 officers, 69 men, plus 4 cadets.

Remarks: P 31 ordered 23-4-82. Construction of a second unit canceled, in part because yard closed in 1983 for financial reasons. Has H.S.A. LIOD t.v./laser/1R fire-control system and 2 H.S.A. t.v./optical target designators for the 57-mm gun. Denny-Brown fin stabilizers. Considerable firefighting capability and can be replenished underway at sea. Boats include a 7.3-m crew boat, 5.5-m inspection boat, and 2 Avon Searaider semi-rigid inflatable boats with 90-hp outboard motors. Harpoon landing system for the helicopter. MEL RRB helo transponder. Carries 2 Wellop 57-mm flare RL. Has three firefighting water monitors.

◆ 3 Emer class Bldr: Verolme, Cork

| | L | In serv. |
|-----------------|---------|----------|
| P 21 EMER | 1977 | 18-1-78 |
| P 22 Aoife | 12-4-79 | 21-11-79 |
| D 92 A rer raic | 2 10 70 | 21-5-80 |

D: 1,025 tons (fl) **S:** 18 kts **Dim:** 65.20 (58.50 pp) \times 10.40 \times 4.36

A: 1/40-mm AA -2/20-mm AA (I \times 2)

Electron Equipt: Radar: 2/Decca . . .

Sonar: Simrad SU side-scan

Remarks: Developed version of the *Deirdre* with raised forecastle instead of bow bulwarks, to improve sea-keeping. Have advanced navigational aids, fin stabilizers. P 22 and P 23 have satellite navigation receivers, a 225-kw bow-thruster, a computerized plotting table, and a new-pattern KaMeWa propeller. Only P 23 has evaporators.

IRELAND (continued) FISHERIES-PROTECTION SHIPS (continued)



Aoife (P 22)

Verolme, 1979

• 1 Deirdre class

Bldr: Verolme, Cork

P 20 DEIRDRE

In serv. 19-6-72

29-12-71



Deirdre (P 20)

L. &. L. Van Ginderen, 1979

D: 980 tons (fl) S: 18 kts (15.5 cruising) Dim: 62.61 (56.20 pp) × 10.40 × 4.35

A: 1/40-mm AA - 2/52-mm flare launchers

M: 2 British Polar SF 112 VS-F diesels; 1 CP prop; 4,200 hp

Fuel: 150 tons Range: 3,000/15.5; 5,000/12 Man: 5 officers, 41 men

Remarks: Vosper fin stabilizers. New KaMeWa CP propeller fitted 1980.

♦ 2 ex-British "Ton"-class minesweepers

CM 10 Grainne (ex-Oulston) CM 12 Fola (ex-Blaxton)

Bldr

In serv. 1955

Thornycroft Thornycroft

1956



Grainne (CM 10)

L. & L. Van Ginderen, 1983

D: 370 tons (425 fl) **S**: 15 kts **Dim**: 46.33 (42.68 pp) \times 8.76 \times 2.5

A: 1/40-mm AA — 2/20-mm AA (II × 1)

M: 2 Mirrlees or Napier Deltic diesels; 2 props; 2,500-3,000 hp Fuel: 45 tons Range: 2,300/12; 3,000/8 Man: 33 tot.

Remarks: Transferred in 1971. Most portable sweep gear has been landed, but winches, cable reels, and davits remain aboard. Sister Banba (CM 11), deactivated 1980, was stricken 1983.

AUXILIARIES AND SERVICE CRAFT

• 1 stores tender

Bldr: R. Dunston, U.K. 1934

JOHN ADAMS

D: 94 grt S: 10 kts Dim: 25.9 × 5.6 × 2.1 M: 1 diesel; 216 hp

• 1 inshore survey launch

Bldr: Fairey Marine, Hamble (In serv. 11-78)

HYDRAFIX

REMARKS: No data available.

1 sail-training craft

Bldr: J. Tyrell, Arklow (In serv. 7-3-81)

ASGARD II

D: 120 tons (fl) S: . . . Dim: 25.6 (21.3 wl) × 6.4 × 2.9

M: 1 Kelvin 6-cyl, diesel; 1 prop; 150 hp/418.2 m² sail area Man: 4 crew plus

Remarks: Operates for both the Navy and Merchant Marine. Tatlye, a French-built Dufour 10.7-m sailboat, is also in service.

4 passenger and service launches

COLLEEN II (In serv. 1972)

RAVEN II (In serv. 1938)

SIR CECIL ROMER (In serv. 1938)

JACKDAW (In serv. 1938)

• 1 fuel barge

CHOWL-D: 100 tons M: 1 diesel; 50 hp

Note: In 1985, the Irish Naval Reserve (An Slua Muiri) operated the 13.7-m motorboat Kathleen Roma, bermuda ketches Creidne (15.8 m) and Nancy Bet (14.6 m), and five 5.5-m sail/oar boats.

State of Israel

Personnel (1984): Active: 3,500, of whom 250 officers and 500 men are especially trained as commandos and frogmen. Reserves: 500 total.

Merchant Marine (1984): 64 ships - 563,189 grt (tankers: 4 ships - 991 grt)

NAVAL AVIATION: During 1978 the Israeli Navy put into service three IAI Westwind 1124 Sea Scan maritime-reconnaissance aircraft, whose mission is to cooperate with surface forces. Range: 1,350 n.m. at 270 kts. Carry sonobuoys. AB 206 helicopters are used on the Aliyah-class missile boats.

WEAPONS AND SYSTEMS

The Israeli Navy uses foreign equipment, such as 76-mm OTO Melara Compact, Breda 40-mm, and Oerlikon guns, and it has perfected the Gabriel anti-ship missile systems.

Gabriel is a 400-kg, solid-propellant, surface-to-surface missile. After being fired, it climbs about 100 meters, then, at 7,500 meters from the launcher, descends slowly to an altitude of 20 meters. Optical or radar guidance is provided in azimuth, and a radio altimeter determines altitude. At a distance of 1,200 meters from the target, the missile descends to 3 meters, under either radio command or semiactive homing. The explosive charge is a 75-kg conventional warhead.

The Gabriel II carries a television camera and a transceiver for azimuth and altitude commands. The television is energized when the missile has attained a certain height and sends to the firing ship a picture of the areas that cannot be picked up by shipboard radar. The operator then can send any necessary corrections during the middle and final phases of the missile's flight, and thus find a target that cannot be seen either by the naked eye or on radar. The range of the Gabriel II is about 40,000 meters.

The Gabriel III system now entering service employs a frequency-agile, home-on-jam active radar seeker. An air-launched "Mk 3A/S" version is in development for launch from F-4, Mirage, Kfir, and A-4 Skyhawk aircraft. The sea-launched version has a range of 36,000 m at Mach .73, weighs 560 kg, and is 3.8 m long. Mk 3A/S weighs 600 kg, and has a range of 60,000 m, being launchable at 300 to 30,000-foot altitudes.

The Barak surface-to-air point-defense system, originally developed for use with an elevatable/trainable 8-cell box-launcher, will now use a 32-cell vertical launch group:

Weight: 87 kg

Speed: Mach 1.8

Length: 2.5 m

Guidance: Semi-active homing

Range: 10 km Warhead: 22 kg

Barak's system weight with 32 rounds requires 1.3 m² deck space plus 2 m³ belowdecks volume. The intended fire-control system employs the AMDR (Advanced Missile Detection Radar), an S-band, pulse-doppler set capable of tracking 250 Mach 0.3 to 3.0 targets. To become operational late 1980s.

Also in use are U.S.-supplied Redeye hand-held, IR-homing missiles.

The U.S. Harpoon was acquired beginning in 1978 and is used on guided-missile patrol boats in a mix with Gabriel.

Israeli Aircraft Industries and Oerlikon were cooperating in the development of a 30-mm antiaircraft gun mounting, the PCM-30. The system would replace 40-mm AA guns in earlier Israeli missile combatants, but it may have been canceled. Fourteen U.S. Vulcan/Phalanx 20-mm close-in weapon systems have been ordered for use in various units of the Sa'ar classes.

WEAPONS AND SYSTEMS (continued)



A Barak SAM being fired from an octuple launcher on a Reshev-class unit

SUBMARINES

Note: Three new submarines, to be built with U.S. aid, are planned to replace the relatively new units below by the early 1990s. The design will probably be prepared by IKL, Lübeck, West Germany, and the ships will either be built entirely in Europe, or shipped as kits for assembly in Israel.

♦ 3 German Type 206 Bldr: Vickers, Barrow, U.K.

| | Laid down | L | In serv |
|-------|-----------|----------|---------|
| GAL | 1973 | 2-12-75 | 12-76 |
| TANIN | 1974 | 25-10-76 | 6-77 |
| RAHAV | 1975 | 1977 | 12-77 |



D: 420/600 tons **Dim**: 17/11 kts **S**: $45.0 \times 4.7 \times 3.8$ A: 8/533-mm TT, fwd 10 U.S. NT-37 torpedoes sub-Harpoon missiles

M: 2 MTU 12V493 TY60 diesels (600 hp each); AEG generators; 1 prop; 1,800 hp Man: 22 tot.

Remarks: Ordered in 4-72. Vickers Type 500. Carry two spare torpedoes. These submarines do not carry the Vickers SLAM submarine-launched antiaircraft missile systems, although provision was made for its installation. U.S. Sub-Harpoon missiles provided and fire-control systems altered, 1983.

GUIDED-MISSILE CORVETTES

♦ 0 (+5 or 6) Sa'ar V class Bldr: . . .

D: 1,000-1,200 tons S: . Dim: 75.0 × . . . × .

A: Harpoon and Gabriel III/IV missiles - Barak SAM system (32 vertical-launch missiles) - guns - ASW torpedoes - helicopter

Electron Equipt: Radar: . . .

Sonar: . . . - EW: . . .

M: CODOG: 1 LM-2500 gas turbine, 2 . . . diesels; . . . hp

Range: . . . Man: . .

Remarks: Design, still in definition as of mid-1985, is not related to the 850-ton corvette proposed by Israeli Shipyard some years ago. Considerable U.S. technology will be incorporated, with prototype possibly to be built in U.S. Rockwell is the prime combat system integration contractor.

GUIDED-MISSILE PATROL BOATS

♦ 2 (+1) Romat class Bldr: Israeli SY, Haifa

| | L | In serv. |
|--------|-------|----------|
| ROMAT | 1981 | 10-81 |
| KESHET | 10-82 | 1982 |
| N. | | |



Keshet

1984

D: 500 tons (fl) S: 31 kts Dim: 61.7 × 7.6 × 2.4

A: 4/Harpoon SSM (II × 2) -6/Gabriel III (I × 6) -1/76-mm OTO Melara DP-1/20-mm Mk 15 CIWS (Vulcan-Phalanx gatling AA)-2/20-mm AA $(I \times 2) - 2/12.7$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/TH-D 1040 Neptune, 1/Orion RTN-10X

EW: MN-53 intercept system — 1/45-tube chaff RL, 4/24-tube chaff RL, 4/single chaff RL

M: 4 MTU 16V956 TB91 diesels; 4 props; 14,000 hp

Range: 1,500/30; 4,000/17

Man: 45 tot.

Remarks: Employ the lengthened Aliyah-class hull, substituting additional armament for the helicopter facility. Apparently only three are to be built. Can carry up to 8 Harpoon or up to 8 Gabriel.

Bldr: Israeli SY, Haifa 2 Aliyah (Sa'ar 4.5) class

In serv. 10-7-80 ALIVAH 8-80 10-80 31-12-80 GEOULA



Aliyah - with Mk 15 CIWS forward, 8 SSM

11-84

D: 500 tons (fl) S: 31 kts Dim: 61.7 × 7.6 × 2.4

A: 4/Harpoon SSM (II × 2) — 4/Gabriel SSM (I × 4) — Aliyah: 1/40-mm AA - 2/20-mm AA $(I \times 2) - 4/12.7$ -mm mg $(I \times 4) - 1$ AB 206 helicopter

Electron Equipt: Radar: 1/TH-D 1040 Neptune, 1/Orion RTN-10X EW: MN-53 intercept system - 1/45-tube chaff RL, 4/24-tube

chaff RL, 4/single chaff RL

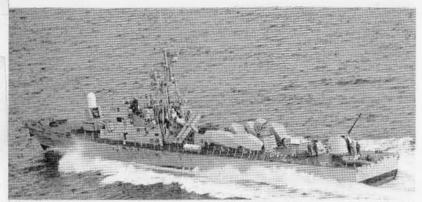
M: 4/MTU 16V956 TB91 diesels; 4 props; 14,000 hp Range: 1,500/30; 4,000/17 Man: 53 tot.

REMARKS: The helicopters were intended to provide an over-the-horizon targeting capability to utilize fully the range capabilities of the Harpoon missiles, which are mounted athwartships in the gap between the fixed hangar and the bridge superstructure. Each Aliyah was to lead a group of missila boats. U.S. Mk 15 CIWS will replace the 40-mm mount forward.

♦ 7 Reshev (Sa'ar IV) class Bldr: Israeli SY, Haifa

| | 1 | | | | |
|----------|--------|----------|------------|---------|----------|
| | L | In serv. | | L | In serv. |
| Kidon | 7-74 | 9-74 | NIT: AHON | 10-7-78 | 9-78 |
| TARSHISH | 1-75 | 3-75 | HATZMAAT | 3-12-78 | 2-79 |
| YAFO | 2-75 | 4-75 | MOLEDET | 22-3-79 | 5-79 |
| 17000000 | 77.117 | | KON EMIYUT | 19-7-79 | 8-80 |

GUIDED-MISSILE PATROL BOATS (continued)



A Reshev - with 4 Harpoon, 6 Gabriel, and Mk 15 CIWS forward





A Reshev - with 2 Harpoon, 6 Gabriel, two speedboats on davits, and Mk 15 CIWS

D: 415 tons (450 fl) S: 32 kts Dim: 58.1 × 7.6 × 2.4

A: 2/Harpoon SSM (I or II × 2 or IV × 1) -4-6 Gabriel SSM (I) -1/76-mm OTO Melara Compact - 1/20-mm Mk 15 CIWS gatling AA - 2/20-mm AA $(I \times 2) - 2/12.7$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/Thomson-CSF Neptune TH-D 1040, 1 Selenia Orion RTN-10X

EW: Elta MN-53 intercept - 0 or 1/45-tube chaff RL, 4 or 6/24-tube chaff RL, 4/single chaff RL

 $M;\ 4\ \mathrm{MTU}\ 16\mathrm{V}956\ \mathrm{TB}91\ \mathrm{diesels};\ 4\ \mathrm{props};\ 14{,}000\ \mathrm{hp}\ (10{,}680\ \mathrm{sust.})$ Range: 1,650/30; 4,000/17.5 Man: 45 tot.

Remarks: Quarters are air-conditioned. The Tarshish had a temporary helicopter deck in place of the after 76-mm gun for experiment with over-the-horizon targeting for Harpoon in 1979. Original missile armament was seven Gabriel. The Gabriel launchers are fixed. The 76-mm guns have been specially adapted for shore bombardment. The forward 76-mm mount was replaced by a 40-mm AA in Nitzahon and Komemiyut, pending availability of the U.S. Vulcan/Phalanx CIWS, the first of which was fitted to a Reshev in 2-83; all had it by 1985. Sisters Keshet and Romach were transferred to Chile 1979-80, and Reshev followed in 2-84, with a possible fourth to follow. Three were built in Israel for South Africa, with others built under license at Durban. The elaborate ECM/ESM system was designed by the Italian firm Elettronica.

• 6 Sa'ar III class Bldr: Constr. Méc. de Normandie, Cherbourg

| | L | | L |
|--------|----------|-------|----------|
| SA'AR | 25-11-69 | HEREV | 20-6-69 |
| SOUFA | 4-2-69 | HANIT | 1969 |
| GAASCH | 24-6-69 | HETZ | 14-12-69 |



Sa'ar III - with 2 Harpoon, 3 Gabriel, 1/76-mm gun

French Navy, 1983

| • 6 Sa'ar II c | loce Di | du Canata | Man do l | Normandie. | Charbonne |
|----------------|---------|-----------|----------|------------|-----------|
| | | | | | |

| | L | | L |
|---------|---------|--------|---------|
| MIVTACH | 11-4-67 | EILATH | 14-6-68 |
| MIZNAG | 1967 | HAIFA | 14-6-68 |
| Misgav | 1967 | Акко | 1968 |



EDO 780 variable-depth sonar on a Sa'ar II

French Navy, 1982



Miznag - Sa'ar II with 5 Gabriel, 1/40-mm AA

1978

D: 220 tons (250 fl) S: 40 kts Dim: 45.0 × 7.0 × 1.8 (2.5 fl)

A: Sa'ar II: 5/Gabriel SSM (III × 1, I × 2) -2/40-mm AA Breda (I × 2) -2/12.7-mm mg - see Remarks

Sa'ar III: 2/Harpoon SSM (I × 2) -3/Gabriel SSM (III × 1) -1/76-mm DP OTO Melara -4/12.7-mm mg (I × 4)

Electron Equipt: Radar: 1/Thomson-CSF Neptune TH-D 1040, 1/Selenia Orion RTN-10X

EW: VHFD/F and Elta MN-53 intercept gear - 6/24-tube chaff RL, 4/1-tube chaff RL

M: 4 MTU MD871 diesels; 4 props; 14,000 hp Fuel: 30 tons Range: 1,000/30; 1,600/20; 2,500/15 Man: 5 officers, 30-35 men

Remarks: Excellent sea qualities and endurance. Sa'ar I is the name that was used for these ships in an all-gun configuration. Four units of the Sa'ar II variant now carry an EDO 780 variable-depth sonar and 2/324-mm Mk 32 single ASW TT (Mk 46 torpedoes) aft and have no after gunmount. Sa'ar III has no ASW capability. Armaments now fairly standardized, but triple Gabriel launchers can be interchanged with the after 40-mm mountings.

GUIDED-MISSILE HYDROFOILS

3 Grumman Mk II/M 161 class

| | Bldr | L | In serv |
|----------|---------------------------|---------|---------|
| SHIMRIT | Lantana BY, Lantana, Fla. | 26-5-81 | 7-82 |
| LIVNIT | Israeli SY, Haifa | 1981 | 1983 |
| SNAPIRIT | Israel, SY, Haifa | | 6-85 |



Shimrit-on trials

Grumman, 1981

GUIDED-MISSILE HYDROFOILS (continued)



Livnit, at rest, foils down, no Gabriel aboard

French Navy, 11-83

D: 71 tons light (103.5 fl) S: 45 kts (52 designed)

Dim: 31.79 foils retracted (25.62 hull; 23.40 wl) × 12.95 (7.32 hull) × 4.75 at rest (1.93 foiling; 1.52 foils retracted)

A: 4/Harpoon SSM (II × 2) -2/Gabriel SSM (I × 2) -2/30-mm BMARC AA $(II \times 1) - 2/12.7$ -mm mg $(I \times 2)$

M: 1 Allison 501-KF gas turbine; 1 CP, 4-bladed prop; 5,400 hp -2 G.M. 6V53 diesels driving retractable 80-hp hydraulic motors for hull-borne maneuvering Electric: 400 kw (2 Pratt & Whitney ST-6 gas turbines)

Fuel: 21 tons Endurance: 3 to 5 days Range: 750/42 foiling Man: 15 tot.

REMARKS: Ordered 1978 from Grumman, with prototype construction subcontracted to Lantana. Numerous delays in program. Livnit built simultaneously at Haifa. Aluminum construction. Pineapple-shaped radome conceals intercept array. Maximum speed on auxiliary system: 10 kts. Turning radius at 45 kts: 200 m. Design based on U.S. Navy's Flagstaff (PGH 2). Liunit has navigational radar atop radome, different engine air intakes. Original plans for 15 cut to 3 in 1982.

PATROL CRAFT

• 1 Dvora class Bldr: Israeli Aircraft Industries, 1978

D: 47 tons (fl) **S:** 36 kts **Dim:** $21.62 \times 5.49 \times 0.94$ (1.82 props) **A:** 2/20-mm AA (I \times 2) — 2/12.7-mm mg **Electron Equipt:** Radar: 1/Decca 926

M: 2 MTU 12V331 TC81 diesels; 2 props; 2,720 hp

Electric: 30 kw Range: 700/32 Man: 8-10 tot.

Remarks: Privately funded prototype, acquired in 1979. The design has been offered with two Gabriel SSM and has been exported to Nicaragua, Argentina, and Chile without missiles.

Bldrs: 12 by Sewart Seacraft, U.S.A.; others by Israeli Air • 37 Dabur class Industries, 1973-77



Dabur class

U.S. Navy, 3-82

D: 25 tons (35 fl) S: 25 kts Dim: 19.8 × 5.8 × 0.8

A: 2/20-mm (I × 2) -2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/Decca 101 or 926

M: 2 G.M. 12V71 TI diesels; 2 props; 960 hp

Electric: 20 kw Range: 1,200/17 Man: 1 officer, 5 men

Remarks: Quarters air-conditioned and spacious. Five given to Christian forces in Lebanon in 1976.

• up to 28 Yatush class (U.S. PBR type)

D: 6.5 tons (8.9 fl) S: 25 kts Dim: 9.73 × 3.53 × 0.81

A: 2/7.62-mm mg M: 2 G.M. 6V53N diesels; Jacuzzi water jets; 430 hp Range: 150/23 Man: 5 tot.

REMARKS: Early units built by Uniflite, Bellingham, Washington, bought in the United States in 1968, later ones built in Israel. Several may be stationed in the Red Sea. Two given to Lebanese Christians, 1975-76.

AMPHIBIOUS WARFARE SHIPS

• 1 former commercial landing craft

Bldr: . . . , West Germany

BAT SHEVA (In serv. 1967)



Bat Sheva

1969

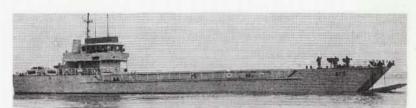
D: 900 tons (1,150 fl) S: 10 kts Dim: 95.1 × 11.2 × . . . A: 4/20-mm-4/12.7-mm mg M: Diesels; 2 props Man: 26 tot.

Remarks: Bought in South Africa in 1968. Construction of two new landing ships is planned: approx. 117.0 × 17.0 × 2.2, helicopter platform, facilities for several hundred troops.

* 3 LCT type

Bldr: Israeli SY, Haifa (In serv. 1966-67)

ASHDOD ASHKELON AHZIV



Ashdod

1971

D: 400 tons (730 fl) S: 10.5 kts Dim: 62.7 × 10.0 × 1.8 A: 2/20-mm AA (I × 2) M: 3 MWM diesels; 3 props; 1,900 hp Fuel: 37 tons Man: 20 tot.

3 Etziongueber class

Bldr: Israeli SY, Haifa (In serv. 1965)

ETZIONGUEBER SHIKMONA KESSARAYA



Etziongueber

D: 182 tons (230 fl) S: 10 kts Dim: 30.5 × 5.9 × 1.3 A: 2/20-mm AA (I × 2) M: Diesels; 2 props; 1,280 hp Man: 10 tot.

VARIOUS SHIPS

• 1 training ship

NOGAH

Remarks: Former small cargo vessel equipped as a training ship for the merchant marine.

• 1 small missile-boat tender

NAHARYA

Remarks: Base craft for the missile craft stationed at Eilath.

1 missile-boat tender

Bldr: Todd SY, Seattle (In serv. 1976)

Ma'oz

Remarks: 4,000-ton oilfield-supply type used as a missile-boat tender in the Mediterranean.

Personnel (1985): 41,900, including 5,200 officers and the San Marco (Marine) bat-

Merchant Marine (1984): 1,590 ships; 9,157,867 grt

(tankers: 282 ships; 4,843,042 grt)

NAVAL AVIATION: The Marinavia operates only helicopters, of which some 64 are in service: 25 SH-3D Sea King heavy ASW (now shore-based and aboard Giuseppe Garibaldi), 27 AB-212 light ASW helicopters for service aboard frigates and destroyers, and 12 AB-204B light ASW helicopters for training. Plans call for an eventual total of 48 AB-212 and 36 SH-3D. In 12-84, the Navy requested authorization for 22 Sea Harrier V/STOL fighter-bombers, but it faces Air Force opposition.

The Air Force conducts fixed-wing maritime ASW patrol, using 18 Bréguet Atlantics ordered in 1968 and delivered by 1973, and 8 Grumman S-2F Tracker mediumrange aircraft. The Atlantics are based at Catania (No. 86 Squadron) and Cagliari/ Elmas (No. 88 Squadron), and No. 87 Tracker Squadron is based at Catania. There are plans to increase the Atlantic total to 32 and to retire the Trackers

The Bell AB-204B and AB-212 are built under license from Bell Helicopter by

Agusta in Italy. Principal characteristics are:

AB-204B

Ceiling: 10,800 ft Range: 2 hr 5 min without torpedoes 1 hr 15 min with torpedoes Armament: 2 Mk 46 or A-244 torpedoes or 4 AS-12 missiles Electronics: ASQ-13 sonar Crew: 3

Length: 17.4 m Rotor: 14.6 m Max. weight: 4,310 kg Motor: 1 turboshaft, 1,200 hp Max. speed: 104 kts Cruising speed: 90 kts

AB-212

Crew: 3

Ceiling: 5,000 ft Range: 4 hr 15 min (360 nm at 100 kts) Armament: 2 Mk 46 or A-244 torpedoes, depth charges, or 2 AS-12 ASM missiles Electronics: ASQ-13B sonar

Length: 17.4 m Rotor: 14.6

Max. weight: 5,086 kg; 3,240 light Motor: 1 turboshaft, 1,290 hp

Max. speed: 130 kts Cruising speed: 100 kts

Note: A new ASW helicopter, the EH-101, is being jointly developed by Agusta and Westland in Great Britain to succeed the SH-3D in the late 1980s; see page 183 for

WARSHIPS IN SERVICE, UNDER CONSTRUCTION, OR AUTHORIZED As Of 1 January 1986

| | AS OF L da | ANUARY 1980 | |
|------------------------|------------|-------------|---|
| | L | Tons | MAIN ARMAMENT |
| ♦ 1 helicopter carrier | | | |
| 1 Giuseppe Garibaldi | 1983 | 10,100 | 4/Otomat, 2/Albatros, 16/helicopters |
| ♦ 10 (+2) submarines | | | |
| | | Tons | |
| | | (surfaced) | |
| 4 (+2) Nazario Sauro | 1976 | 1,456 | 6/533-mm TT |
| 4 Enrico Toti | 1967-68 | 535 | 4/533-mm TT |
| 2 Tang | 1951 | 2,100 | 8/533-mm TT |
| • 3 cruisers | | | |
| | | Tons | |
| 1 VITTORIO VENETO | 1967 | 7,500 | 1/missile launcher, 8/ 76.2-mm, 9/helicop- ters |
| 2 Andrea Doria | 1962-63 | 6,500 | 1/missile launcher, 8/ 76.2-mm, 4/helicop- ters |
| ♦ 4 (+2) destroyers | | | |
| 0 (+2) Animoso | 1989-90 | 4,400 | 1/missile launcher, 2/ 127-mm, ASW weap- ons |
| 2 AUDACE | 1971 | 3,950 | 1/missile launcher, 2/ |
| | | | 127-mm, ASW weap- ons |
| 2 Impavido | 1962 | 3,201 | 1/missile launcher, 2/ 127-mm, ASW weap- ons |
| ♦ 14 frigates | | | |
| 8 Maestrale | 1981- | 3,040 | 4/Otomat, 1/Sea Spar- |
| | | | row, 1/127-mm, ASW weapons |
| 4 Lupo | 1976-79 | 2,208 | 8/Otomat, 1/Sea Spar- |
| 1 | | | row, 1/127-mm, ASW weapons |

| ASW weap- |
|-----------------------------|
| |
| 1/Albatros, 1/ ASW weap- |
| ASW weap- |
| ASW weap- |
| - |

- 7 missile hydrofoils
- ♦ 34 (+6) mine countermeasures ships
- 3 (+2) amphibious ships

WEAPONS AND SYSTEMS

A. MISSILES

· Surface-to-air

Standard SM-1 ER and SM-1 MR (see under U.S.A.)

Albatros Aspide (Italian version of the Sea Sparrow) Bldr: Selenia

Ceiling: 15 m (min.); 5,000 m (max.) Length: 3.70 m

Diameter: 0.20 m Weight: 204 kg

Wingspan: 1.02 m Range: 10,000 m

Guidance: semiactive homing

This equipment employs an octuple launcher built by OTO Melara and weighing 7 tons; elevation: 5 to +65 degrees. Controlled by NA-30 system. A quadruple launcher has been produced for use on export corvettes.

Surface-to-surface

Otomat Mk 1 Bldr: OTO Melara/Matra

Length: 4,820 m Diameter: 1,060 m (with boosters); 460 m (without boosters) Wingspan: 1.19 m Weight: 750 kg

Range: 60-80 km Guidance: Thomson-CSF active homing, 3-axis

This missile flies almost at sea level after firing, climbs at a steep angle to a predetermined height, and strikes its target during descent.

Otomat Mk 2 (also known as "Teseo")

This model differs from the Mk 1 in having an Italian (SMA) active radar homing head, instead of a French one. It is also a "sea-skimmer"; that is, it flies close to the water after firing. Its explosive charge is about 200 kg and its ramjet propulsion system allows it to be used at ranges limited only by its guidance system and its target designation. Range: 150 km; speed: 300 m/sec.

Two additional projects are in development: "Briaero," a Mach 1.0 weapon with a 200-400 km range, and "Otomach," a Mach 2, turbojet-powered weapon being devel-

oped by OTO Melara and Alfa-Romeo.

Air-to-surface

The French S.N.I.A.S. AS-12 wire-guided anti-shipping missile has been adopted for use by helicopters, and the Marte Mk 2 is in production for use by Sea King helicopters:

Length: 4.84 m (with 1.09m booster) Diameter: 31.6 cm Span: 98.7 cm (cruciform)

Speed: Mach 0.8 Range: over 20 km Warhead: 70 kg

Weight: 340 kg

Guidance is by gyro autopilot and radar altimeter over mid-course, with active pseudo-monopulse radar homing, using the Otomat's seeker. Fuzing is influence and impact. The airframe is that of the Sistel Sea Killer surface-launched anti-ship missile.

B. GUNS

40-mm Breda/Bofors Compact twin

Length: 70 calibers

Muzzle velocity: 1,000 m/sec.

Max. effective range, antiaircraft fire: 3,500-4,000 m

Rate of fire: 300 rounds/min/barrel

Projectile weight: 0.96 kg

Number of ready-service rounds: 444 or 736 (depending on installation) Fire control: Dardo system (Selenia RTN-20X radar)

Impact or proximity fusing

76-mm OTO Melara

Single- or twin-barreled, automatic, for air, surface, and land targets

Length: 62 calibers

Muzzle velocity: 850 m/sec

Max. effective range, surface fire: 8,000 m

Max. effective range, antiaircraft fire: 4,000-5,000 m

Rate of fire: 60 rounds/min/barrel

GUNS (continued)

76-mm OTO Melara Compact

Single-barreled light antiaircraft automatic fire; entirely remote control with muzzle brake and cooling system

Length: 62 calibers

Muzzle velocity: 925 m/sec

Max. effective range, surface fire: 8,000 m

Max. effective range, antiaircraft fire: 4,000-5,000 m

Rate of fire: 85 rounds/min

Weight of mount: 7.35 tons, because of the use of light alloys and fiberglass; 80 ready-service rounds in the drum.

127-mm OTO Melara Compact

Single-barreled automatic triple-purpose, remote control

Length: 54 calibers

Muzzle velocity: 807 m/sec

Max. effective range, surface fire: 15,000 m

Max. effective range, antiaircraft fire: 7,000 m

Rate of fire: 45 rounds/ min, automatic setting

Weight of the mount: 32 tons because of the use of light alloys and a fiberglass shield. The gun has a muzzle brake; it can automatically fire 66 rounds, thanks to 3 loading drums, each with 22 rounds. Two hoists serve two loading trays with rounds coming from the magazine, and a drum may be loaded even while the gun is firing. An automatic selection system allows a choice of ammunition (antiaircraft, surface target, pyrotechnics, chaff for cluttering radar).

This equipment has also been purchased by the Canadian Navy for its Iroquois-class

C. ANTISUBMARINE WEAPONS

K113 Menon mortar

The system has a single 305-mm barrel some 4.6 m long, with automatic loading. Fire control is usually directed in the underwater battery plot. The mortar is fired at a 45-degree angle, with the range fixed by a system similar to that of the no-longer-used triple-barreled Menon; firing 160-kg depth-charges round by round; gas relief valves from three powder chambers have adjustable vents; range varies from 400 to 900 m. The weapon is automatically reloaded from the magazine by hoist and a loading drum.

Torpedoes

American Mk 46 and Italian Whitehead Motofides A-244 small ASW torpedoes are used on ships (using the triple ILAS-3 tube mount, a version of the U.S. Mk 32 ASW torpedo tube set) and helicopters.

The Whitehead Motofides A-184 wire-guided torpedo uses a 533-mm carrier torpedo that ejects an A-244 passive homing torpedo; range is over 15,000 m. A-290, a 50-knot weapon using the A-244's seeker has been in development since 1981 and was to begin trials in 1984; it will use a lithium battery.

D. RADARS

The Italian Navy has used a number of American radars (SPS-6, SPS-12, SPS-52, etc.) but now primarily has a number of systems developed in Italy, including:

| Type | Band | Remarks |
|---------------|-----------|--|
| RTN-10X Orion | I/J(X) | Gun and missile fire control (Argo system) |
| RTN-20X Orion | I/J(X) | With Dardo system (40-mm gun) |
| SPQ-2D | I/J(X) | Combined surveillance |
| RAN-3L | D(S) | Air search, 3-dimensional |
| RAN-10S | E/J (S/X) | Combined surveillance |
| RAN-11X | I/J(X) | Combined air/surface search |
| RAN-12X | I/J(X) | Combined air/surface search (in development) |
| RAN-20S | E/F(S) | Air search |
| RTN-30X | I/J(X) | Target acquisition (Albatros system) |
| 3 RM series | I/J(X) | Navigation and surface search |
| MM/SPN-749(V) | I(X) | Navigation set on Garibaldi; 2 antennas |

E. SONARS

Most of the newest equipment is American or Dutch.

| | Type | Frequency | | Type | Frequency |
|----------|------|-----------|--------|-------------|-----------|
| CWE 610 | Hull | LF(Dutch) | SQS-10 | Hull | MF |
| DE 1160B | Hull | MF | SQS-4 | Hull | MF |
| DE 1164 | VDS | MF | SQA-10 | VDS | MF |
| SQS-23 | Hull | MF | SQS-36 | VDS | HF |
| SQS-29 | Hull | MF | SQQ-14 | Minehunting | HF |
| SQS-11A | Hull | MF | | | |

F. TACTICAL INFORMATION SYSTEM

The Italian Navy has developed the SADOC system, which is compatible with the American NTDS and the French SENIT.

G. COUNTERMEASURES

A wide variety of intercept arrays, many with stabilized cylindrical radome antennas, are in use. The Breda SCLAR chaff rocket-launching system is used on frigates and larger ships; it has 20 tubes for 105-mm rockets in a trainable, elevatable launcher. A number of Wallops Barricade chaff rocket launchers were ordered 1984.

HELICOPTER CARRIER

• 1 Garibaldi class

| | Bldr | Laid | L | In serv. |
|--------------------------|--------------------------|---------|--------|----------|
| | | down | | |
| C 551 Giuseppe Garibaldi | Italcantieri, Monfalcone | 26-3-81 | 7-6-83 | 30-9-85 |

D: 10,100 tons (13,139 fl) S: 29.5 kts

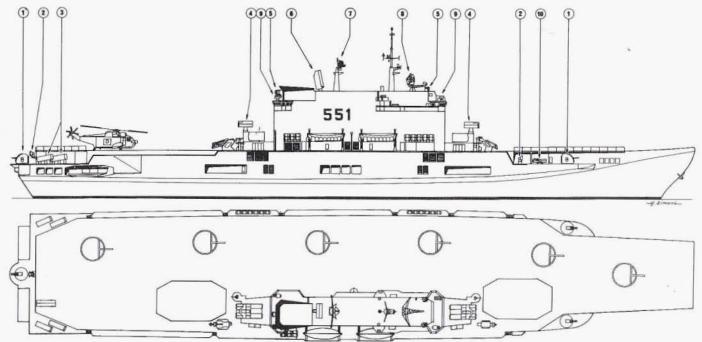
Dim: 180.2 (162.8 pp) × 30.4 (23.8 wl) × 6.7

A: 4/Otomat-Teseo Mk 2 SSM (I × 4) — 2/Albatros SAM (VIII × 2; 46 Aspide missiles) — 6/40-mm AA Breda Dardo (II × 3) — 6/324-mm ILAS-3 ASW TT (III × 2) — 16/SH-3D Sea King helicopters

Electron Equipt: Radar: 1/RAN-3L, 1/RAN-20S, 1/RAN-10S, 1/SPS-702 surface search, 1/MM/SPN-749(V) navigational (2 antennas) — 3/RTN-20X, 2/RTN-30X

Sonar: Raytheon DE 1160

EW: passive intercept arrays—2/SCLAR chaff RL (XX \times 2) TACAN: . . .



Giuseppe Garibaldi 1. Twin 40-mm AA 2. Dardo system radar (RTN-20X) 3. Otomat MK II launchers 4. Albatros SAM launchers 5. RTN-30X radar for Albatros/Aspide 6. RAN-3L 3-dimensional air-search radar 7. RAN-10S surface/air-search radar 8. RAN-20S air-search radar 9. SCLAR chaff launchers

HELICOPTER CARRIER (continued)



Giuseppe Garibaldi (C 551) on trials

Italian Navy, 1985

M: 4 G.E./Fiat LM 2500 gas turbines; 2 CP props; 80,000 hp Electric: 9,360 kw (6 GMT B230-12M diesel alternator sets) Range: 7,000/20 Man: 560 tot. (accommodations for 825)

Remarks: Began sea trials 1-85. The Garibaldi is essentially an ASW ship for helicopters, although the design would permit the handling of V/STOL aircraft as well. The flight deck is 173.8 meters long. There are two elevators, one forward of and one abaft the island. There are six flight-deck spaces for flight operations. The hangar (110 × 15 × 6 meters) can accommodate 12 Sea King, or 10 Sea Harrier and 1 Sea King, although political considerations have precluded acquisition of the "offensive" Sea Harrier to date. Steel superstructure and hull. To permit helicopter operations in heavy weather, much attention was given to stability, and the ship has two pairs of fin stabilizers; the bow has a small "ski-jump" sheer, officially to improve deck dryness. There are five decks; the flight deck; the hangar deck, which is also the main deck; and two decks and a platform deck below the hangar deck. Thirteen watertight bulkheads divide the ship into 14 sections. Has IPN-20 computerized data system, capable of handling 200 threat tracks simultaneously. Additional photo in addenda.

SUBMARINES

Note: Planned are 4 to 6 S-90-class submarines to replace the *Toti* and *Tang* classes. Of some 1,500–2,000 tons submerged displacement, the first is planned to be laid down in 1988 for delivery in 1993-94. Will have 22-kt submerged speed and carry 12 torpedoes (6 tubes).

 4 (+2) Nazario Sauro class tiere, Monfalcone) Bldr: C.R.D.A., Monfalcone (last two: Italcan-

| | Laid down | L | In serv. |
|------------------------------|-----------|----------|----------|
| S 518 NAZARIO SAURO | 26-6-74 | 9-10-76 | 1-3-80 |
| S 519 CARLO FECIA DI COSSATO | 15-7-76 | 16-11-77 | 1-3-80 |
| S 520 LEONARDO DA VINCI | 1-7-76 | 20-10-79 | 6-11-82 |
| S 521 GUGLIERMO MARCONI | 23-10-79 | 20-9-80 | 16-10-82 |
| S N | | 1986 | |
| S N | | 1987 | |



Leonardo da Vinci (S 520) — with Maestrale (F 570) in background Italian Navy, 1982



Carlo Fecia di Cossato (S 519)

C. Martinelli, 3-83

D: 1,456 surf./1,641 tons sub. S: 14 kts surf./12 kts snorkel/20 kts sub.

Dim: 63.85 × 6.83 × . . . (12.38 keel to top of sail) A: 6/533-mm B.512 TT fwd (12 Type A-184 torpedoes)

Electron Equipt: Radar: MM/BPS-704

Sonar: USEA/ Selenia IPD-70S system, Velox M5

M: 3 GMT A210 16M diesel generators (2,160 kw), 1 twin, 3,140-kw motor; 1 prop; 4,270 hp

Fuel: 144 tons Endurance: 45 days

Range: 12,500/11 surf; 7,000/12; 12,500/4 snorkel; 300+/4 sub.

Man: 6 officers, 43 men

Remarks: First two authorized 1972; second pair ordered 12-2-76. Third pair (to have longer tubes to accommodate U.S. Harpoon missiles) ordered 7-3-83. Can travel 20 knots submerged for 1 hour, or 100 hours at 4 knots. Maximum diving depth is over 250 meters. Seven-bladed propeller. Completion of first pair delayed by need to replace original batteries. Batteries: 2 148-cell, 6,000 Amp/hr, one hour rate. Can maintain 19.3 kts for one hour submerged. Have SISU-1 fire-control system, which can track 4 targets simultaneously. Sonar system operates 200 Hz—7 kHz passive, 8-15 kHz active, and has active, passive, passive-ranging, and surveillance modes.

DIL CDD L M CI

| • 4 Enrico Toti class | | Bldr: C.R.D.A., Montaicone | | | |
|-----------------------|-------------------------|----------------------------|----------|----------|--|
| | | Laid down | L | In serv. | |
| | S 505 ATTILIO BAGNOLINI | 15-4-65 | 28-8-67 | 22-6-68 | |
| | S 506 ENRICO TOTI | 15-4-65 | 12-3-67 | 22-1-68 | |
| | S 513 ENRICO DANDOLO | 10-3-67 | 16-12-67 | 29-9-68 | |
| | S 514 Lazzaro Mocenigo | 12-6-67 | 20-4-68 | 11-1-69 | |
| | | | | | |



Enrico Toti (S 506)

1978



Enrico Dandolo (S 513)

G. Gyssels, 3-83

D: 535 tons surf./591 sub. S: 9.7 kts surf./14 sub. Dim: 46.20 × 4.75 × 3.99

A: 4/533-mm TT (6 A-184 torpedoes)

Electron Equipt: Radar: 1/3 RM-20/SMG

Sonar: JP-64 active, Velox passive

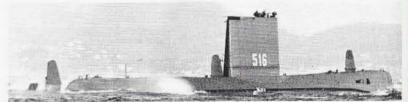
M: Diesel-electric propulsion: 2 Fiat/MB 820 diesels; 1 electric motor; 1 prop; 2.200 hp

Range: 7,500/4.5 Man: 4 officers, 22 men

Remarks: Can make 15 kts for one hour submerged. Diving depth: 180 m.

◆ U.S. Tang class Bldr: Electric Boat, Groton, Connecticut

S 515 Livio Piomarta (ex-Trigger, SS 564) Laid down L In serv. S 516 Romeo Romei (ex-Harder, SS 568) 24-2-49 14-6-51 31-3-52 S 516 Romeo Romei (ex-Harder, SS 568) 30-6-50 3-12-51 19-8-52



Romeo Romei (S 516)

G. Arra, 1976

D: 2,100 surf./2,700 sub. tons
 S: 14 surf./14 kts sub.
 Dim: 87.5 × 8.3 × 6.2
 A: 8/533-mm TT (6 long fwd, 2 short aft)

Electron Equipt: Radar: 1/BPS-12-Sonar: BQR-3, BQS-4, BQG-4

SUBMARINES (continued)

M: Diesel-electric propulsion: 3 Fairbanks-Morse 38ND8% × 10 diesels; 2 Westinghouse motors; 2 props; 5,500 hp

Range: 7,600/15; 17/9 (sub.) Man: 7 officers, 71 men

Remarks: S 515 transferred to Italy on 10-7-73; S 516 on 20-2-74. Both ships have BQG-4 "PUFFS" passive ranging sonar. Have U.S. Mk 106 Mod.14 fire-control system. Aft tubes probably no longer used.

CRUISERS

• 1 Vittorio Veneto class

Bldr Laid down C 550 VITTORIO VENETO Cant. Riuniti Castellammare 10-6-65 5-2-67 12-7-69



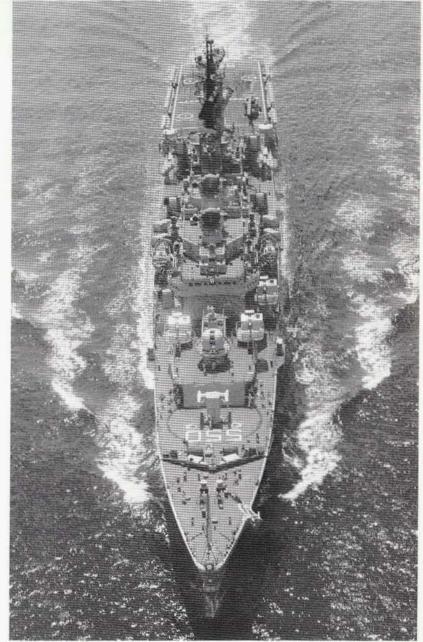
Vittorio Veneto (C 550)

C. Martinelli, 1983



Vittorio Veneto (C 550)

Italian Navy, 1983



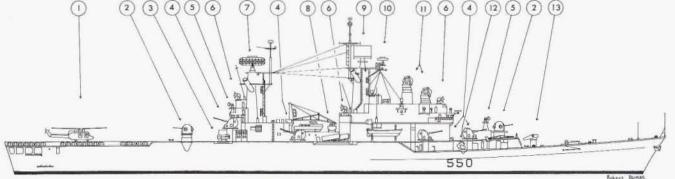
Vittorio Veneto (C 550)

Italian Navy, 1983

D: 7,500 tons (8,870 fl) S: 30.5 kts

Dim: 179.60 (170.61 pp) × 19.42 (hull) × 4.70 (7.4 max.)
A: 1/Mk 20 Mod. 7 Aster launch system (20 ASROC and 40 Standard SM-1 ER) −4/Otomat-Tesio Mk II SSM (I × 4) −8/76-mm OTO Melara DP $(I \times 8) - 6/40$ -mm Breda Dardo AA $(II \times 3) - 6/324$ -mm ILAS-3 ASW TT (III × 2) - 6/AB-212 ASW helicopters

Electron Equipt: Radar: 1/RAN-20X, 1/SPS-52C, 1/MM/SM-702, 1/3RM-7, 2/SPG-55B, 2/RTN-10X, 3/RTN-20X — TACAN: URN-20A Sonar: SQS-23



Vittorio Veneto 1. AB-212 helicopter 2. 40-mm Breda Dardo twin AA 3. ILAS-3 triple ASW TT 4. 76-mm DP 5. RTN-20X f.c. radar (for 40-mm AA) 6. RTN-20X f.c. radar (for 76-mm DP) 7. RAN-20X early-warning radar 8. Tesio/Otomat Mk 2 SSM 9. SPS-52C 3-D radar 10. MM/SM-702 surface-search radar 11. SPG-55B f.c. radar tracker illuminators (for Standard) 12. SCLAR RL 13. Mk 20 Aster launcher

CRUISERS (continued)

M: 2 sets Tosi GT; 2 props; 73,000 hp Electric: . . . Boilers: 4 Foster-Wheeler; 43 kg/cm², 450°C Fuel: 1,200 tons Range: 3,000/28; 6,000/20 Man: 53 officers, 504 men

REMARKS: Underwent modernization 1981-83 with 4 Otomat Mk 2 (Teseo) missiles and 3 Dardo 40-mm AA gun systems added. The radar suite was updated, the SPS-40 being replaced by the Italian RAN-20X. The flight deck (40 \times 18.5) is served from a hangar immediately below by two elevators (18 \times 5.3). The hangar (27.5 \times 15.3) is two decks in depth. Very extensive, stabilized electronic intercept arrays. Two sets anti-rolling fin stabilizers. The Aster system can launch either ASROC ASW or Standard SM-1 ER SAM and has a total capacity of 60 missiles on three magazine drums. Beam listed does not include projections around SCLAR launchers fwd or flight deck aft.

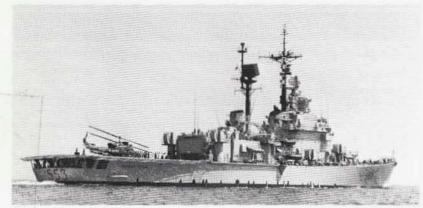
2 Andrea Doria class

| | Bldr | Laid down | L | In serv. |
|--------------------|----------------------------------|-----------|----------|----------|
| C 553 Andrea Doria | C. Nav. Tirreno, Riva Trigoso | 11-5-58 | 27-2-63 | 23-2-64 |
| C 554 CAIO DUILIO | Navalmeccanica Castellammare | 16-5-58 | 22-12-62 | 30-11-64 |



Andrea Doria (C 553)

G. Arra, 8-84



Andrea Doria (C 553)

G. Arra, 8-84



Caio Duilio (C 554) - as training cruiser

P. Voss, 7-83



Caio Duilio (C 554)

L. & L. Van Ginderen, 8-83

D: 6,500 tons (7,300 fl) S: 30 kts Dim: 149.3 (144.0 pp) × 17.25 × 4.96

A: 1/Mk 10 launcher (40 Standard SM-1 ER — 6 or 8/76-mm AA (I × 6 or 8) — 6/324-mm ASW TT (III × 2) — 3/AB-212 helicopters (C 554:2) Electron Equipt: Radar: 1/RAN-20S, 1/SPQ-2D, 1/SPS-52B, 2/SPG-55C, 3 or

4/RTN-10X (Argo system) TACAN: SRN-15 - Sonar: SQS-23

EW: passive arrays, 2/SCLAR chaff launchers $(XX \times 2)$

M: 2 sets GT; 2 props; 60,000 hp Electric: 4,700 kw

Boilers: 4 Foster-Wheeler; 43 kg/cm², 450°C Fuel: 1,100 tons Rnage: 6,000/15 Man: 47 officers, 437 men (C 554:418) men

Remarks: The flight deck is 30 × 16 meters on C 553. Hangar on main deck. Fin anti-rolling stabilizers fitted. The engineering spaces are divided into two groups, forward and aft: each has a boiler room with two boilers and a turbine compartment separated by living spaces. In each turbine space are two 1,000-kw turbo-alternators; there are also two 350-kw emergency diesel alternators. The engineering groups are automatic and remote-controlled. Listed beam does not include platforms extending from sides aft. C 554 refitted 1979-80 as training cruiser to replace San Giorgio (D 562). The after two 76-mm guns and the aft NA-9 gunfire control system were removed, and the hangar was converted to accommodations and classrooms; a new, lower hangar was built on abaft the old one, reducing the flight-deck length and limiting the ship to two helicopters. A small navigational radar was added atop the hangar for helicopter control.

Both received Standard SM-1 ER missiles and associated electronics during refits in the latter 1970s. Have four (C 554: 3) Argo NA-9 GFCS.

GUIDED-MISSILE DESTROYERS

♦ 0 (+2) Animoso class

| | Bldr | Laid down | L | In serv. |
|-------------------|------|-----------|-------|----------|
| D 560 Animoso | | | * * * | 1991 |
| D 561 Ardimentoso | | 4/A 8 | | 1991 |



Animoso (D 560) - provisional drawing

Ships of the World, 3-85

 $\mathbf{D}:$. . . tons (5,000 fl) $\mathbf{S}:$ 32 kts $\mathbf{Dim}:$ 137.0 \times . . . \times . . . A: 4/Teseo-Otomat Mk II SSN — 1/Mk launcher (40 Standard SM-1 MR missiles) — 1/Albatros SAM syst.(VIII \times 1); . . . Aspide missiles) — 1/127-mm OTO Melara Compact DP — 8/40-mm (II \times 4) Breda Dardo AA — 6/324mm ILAS-3 ASW TT (III × 2) — 2/SH-3D Sea King or EH101 helicopters

Electron Equipt: Radar: 1/RAN-20S, 1/SPS-52C, 1/surface search, 1/navigational, 2/SPG-51D, 3/GFCS

Sonar: bow-mounted array

EW: passive arrays, 2/SCLAR chaff RL (XX × 2)

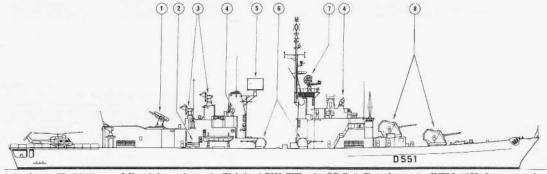
M: 4 G.E./Fiat LM-2500 gas turbines; 2 props; 80,000 hp

Electric: . . . Range: . . . Man: . .

Remarks: Authorized 1983; several years behind schedule. May receive the OTO Melara "Super Rapid" Compact 76-mm DP vice the twin 40-mm mounts. Will replace the Impavido class.

2 Audace class

| | Bldr | Laid down | L | In serv. |
|--------------|-------------------------|-----------|----------|----------|
| D 550 Ardito | Nav. Mec. Castellammare | 19-7-68 | 27-11-71 | 5-12-73 |
| D 551 Audace | C. Nav. del Tirreno | 27-4-68 | 2-10-71 | 16-11-72 |



Audace (D 551) 1. Mk 13 launcher 2. Triple ASW TT 3. SPG-51B radars 4. RTN-10X fire-control radars 5. SPS-52B radar 6. 76-mm DP 7. RAN-20S radar 8. 127-mm DP H. Simoni



Audace (D 551)

G. Arra, 1984



Ardito (D 550)

G. Arra, 1984



Ardito (D 550) - note torpedo-tube recesses at stern L. & L. Van Ginderen, 5-84

D: 3,600 light/3,950 tons (4,559 fl) S: 33 kts Dim: $140.7 \times 14.65 \times 4.60$ (hull) A: 1/Mk 13 missile launcher (40 Standard SM-1 MR) —2/127-mm OTO Melara Compact DP (I \times 2) —4/76-mm AA OTO Melara Compact DP (I \times 4) —6/324-mm ASW TT (II \times 2) —4/533-mm TT (I \times 4, AS-184 wire-guided torpedoes) —2/AB-212 or 1/SH-3D Sea King ASW helicopter

Electron Equipt: Radar: 1/3 RM 20, 1/RAN-20S, 1/SPQ-2, 1/SPS-52, 2/SPG-51B, 3/RTN-10X (Argo systems)

Sonar: CWE 610

EW: passive arrays, 1/SCLAR chaff RL (XX × 2)

M: 2 sets GT; 2 props; 73,000 hp

Boilers: 4 Foster-Wheeler; 43 kg/cm², 450°C Range: 4,000/25 Man: 31 officers, 350 men

Remarks: Habitability has been given much attention in the design of these very fine ships. The four single 533-mm torpedo tubes are mounted at the extreme stern, below the fantail, and launch A-184 wire-guided torpedoes aftward. Both now have RAN-20S air-search radar, replacing SPS-12 (D 550) or RAN-3 (D 551). The missile system is to be modernized. Have fin stabilizers.

♦ 2 Impavido class

| | Bldr | Laid down | L | In serv. |
|-----------------|---------------------------------|-----------|----------|----------|
| D 570 Impavido | C. N. del Tirreno, Riva Trigoso | 10-6-57 | 25-5-62 | 16-11-63 |
| D 571 Intrepido | Ansaldo, Livorno | 16-5-59 | 21-10-62 | 18-7-64 |



Intrepido (D 571)

L. & L. Van Ginderen, 1983

D: 3,201 tons (3,990 fl) S: 33.5 kts Dim: $131.3 \times 13.65 \times 4.43$ A: 1/Mk 13 launcher aft (40 Standard SM-1 MR missiles) — 2/127-mm 38-cal. DP (II \times 1) fwd — 4/76-mm DP (I \times 4) — 6/324-mm ASW TT (III \times 2)

Electron Equipt: Radar: 1/SPS-12, /SPQ-2, 1/SPS-52B, 2/SPG-51B, 3/RTN-10X (Argo systems)

Sonar: 1/SQS-23

EW: passive arrays, 2/SCLAR chaff RL (XX \times 2)

M: 2 sets Tosi GT; 2 props; 70,000 hp

Boilers: 4 Foster-Wheeler; 43 kg/cm², 450°C Fuel: 650 tons Range: 3,300/20; 2,900/25; 1,500/30 Man: 22 officers, 318 men

Remarks: Refitted (D 571 in 1974-75, D 570 in 1976-77) with new fire control for guns and new missiles. Have fin stabilizers.

GUIDED-MISSILE FRIGATES

| | 8 Maestrale class | Bldr: CNR, Riva Trigoso (F 571: CNR, Muggiano) |
|--|-------------------|--|
|--|-------------------|--|

| | Laid down | L | In serv. |
|-----------------|-----------|----------|----------|
| F 570 Maestrale | 8-3-78 | 2-2-81 | 7-3-82 |
| F 571 GRECALE | 21-3-79 | 12-9-81 | 5-2-83 |
| F 572 LIBECCIO | 1-8-79 | 7-9-81 | 5-2-83 |
| F 573 Scirocco | 26-2-80 | 17-4-82 | 20-9-83 |
| F 574 ALISEO | 26-2-80 | 29-10-82 | 20-9-83 |

GUIDED-MISSILE FRIGATES (continued)

| | Laid down | L | In serv. |
|---------------|-----------|----------|----------|
| F 575 Euro | 15-4-81 | 25-3-83 | 7-4-84 |
| F 576 ESPERO | 1-8-82 | 19-11-83 | 4-5-85 |
| F 577 ZEFFIRO | 15-3-83 | 19-5-84 | 4-5-85 |



Grecale (F 571)

C. Martinelli, 6-84



Maestrale (F 570) - showing VDS well at stern

G. Gyssels, 12-82



Grecale (F 571)

G. Arra, 1984



Libeccio (F 572)

C. Martinelli, 10-82

D: 3,040 tons (3,200 fl) S: 33 kts

 $\begin{array}{l} \textbf{Dim: } 122.73 \ (116.4 \ pp) \times 12.88 \times 4.10 \ (hull; 5.95 \ max.) \\ \textbf{A: } 4/\text{Teseo Otomat Mk 2 SSM } (I \times 4) - 1/\text{Albatros SAM system } (VIII \times 1, 24 \\ \text{Aspide missiles}) - 1/127\text{-mm DP OTO Melara} - 4/40\text{-mm Breda Dardo AA} \end{array}$ (II × 2) -2/533-mm TT (A-184 torpedoes) -6/324-mm ILAS-3 ASW TT (III × 2) -2/AB-212 helicopters

Electron Equipt: Radar: 1/MM/SPS-702, 1/RAN-10S, 1/SPQ-2F, 1/RTN-30X (NA-30A system), 2/RTN-20X (Dardo system)

Sonar: 1/Raytheon DE 1160B, 1/Raytheon DE 1164 VDS EW: Elettronica Newton active/passive suite, 2/SCLAR chaff launchers (XX × 2)

M: CODOG: 2 G.E./Fiat LM-2500 gas turbines, 50,000 hp; 2 GMT B 230-20 DV diesels, 10,146 hp; 2 CP props

Electric: 3,120 kw Endurance: 90 days Range: 1,500/30; 3,800/22; 6,000/15 Man: 24 officers, 200 men

Remarks: An enlarged version of Lupo with better seaworthiness and two helicopters at the expense of four anti-ship missiles and about 2.5 knots maximum speed. Have SADOC-2 (IPN-20) computerized data system. There is a Galileo OG-30 optronic backup director to the NA-30A GFCS system and two MM 59 optical backup directors for the 40-mm guns. Helo deck is 12×27 m. D 1164 is a VDS version of DE 1160 and operates on the same frequencies. The hull sonar is a commercial version of the U.S. Navy SQS-56 as used in the *Oliver Hazard Perry* (FFG 7) class. FF 576 and FF 577 ordered 10-80, 572-575 in 12-76, 576 and 577 in 10-80. Have U.S. Prairie/ Masker bubbler noise-suppression system and SLQ-25 Nixie towed torpedo decoys. There are plans to lengthen the VDS tow cable from 600 m to 900 m and to attach a towed passive linear hydrophone array to the VDS fish; trials to take place with F 570.

Bldr: C. N. Riuniti, Riva Trigoso (F 567; CNR Muggiano) 4 Lupo class

| | Laid down | L | In serv. |
|------------------|-----------|---------|----------|
| F 564 Lupo | 8-10-74 | 29-7-76 | 20-9-77 |
| F 565 SAGITTARIO | 4-2-76 | 22-6-77 | 18-11-78 |
| F 566 Perseo | 28-2-77 | 8-7-78 | 1-3-80 |
| F 567 ORSA | 1-8-77 | 1-3-79 | 1-3-80 |

D: 2,208 tons (2,340 trials; 2,525 fl)

Dim: 113.55 (106.00 pp) × 12.00 × 3.54 (hull)

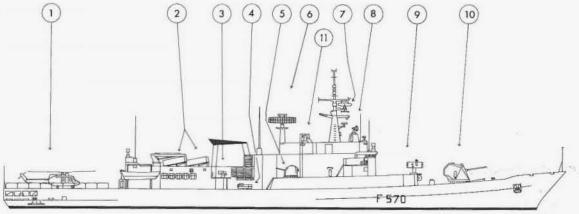
S: 35.23 kts (trials, Lupo); 32 kts at 80% power; 20.3 kts on 2 diesels

A: 8/Otomat Mk 2 SSM (I \times 8) — 1/Nato Sea Sparrow system (VIII \times 1) — 1/127-mm OTO Melara DP — 4/40-mm Breda AA (II \times 2) — 6/324-mm Mk 32 ASW TT (III × 2) — 1/AB-212 helicopter

Electron Equipt: Radar: 1/3 RM 20, 1/RAN-10S combined search, 1/SPQ-2F, 1/RAN-11/LX combined search, 1/Orion RTN-10X (NA-10 mod. 2 Argo f.c. system), 1/Mk 91 mod. 1, 2/Orion RTN-20X (Dardo system)

Sonar: Raytheon 1160B

EW: active and passive systems, 2/SCLAR chaff RL (XX × 2)



Maestrale class 1. AB-212 helicopter 2. Otomat SSM launchers 3. SCLAR chaff rocket launchers 4. ILAS-3 triple ASW TT 5. Breda Dardo twin 40-mm AA 6. RAN-10S radar antenna 7. RAN-11L/X surface-search radar antenna 8. RTN-30X gun/missile-control radar 9. Albatros launcher (VIII × 1) 10. 127-mm dual-purpose gun 11. RTN-20X radar directors

GUIDED-MISSILE FRIGATES (continued)



Perseo (F 566)

Pradignac & Leo, 1985



Perseo (F 566)

L. & L. Van Ginderen, 6-83



Sagittario (F 565)

Italian Navy

M: CODOG: 2 G.E./Fiat LM-2500 gas turbines, 50,000 hp; 2 GMT A 230-20M diesels, 7,900 hp; 2 CP props

Electric: 3,120 kw (4 Fiat 236 SS diesel alternator sets)
Range: 900/35; 3,450/20 (diesels) Man: 17 officers, 177 men

Remarks: Fin stabilizers. Telescopic hangar. The Otomat Mk-II (Teseo) launchers are mounted two per side abreast the hangar and two per side on the forward superstructure. The Lupo had her radar antennae redistributed 1978-79 and a new mast added at the after end of the stack. The SAM system uses the U.S. Mk 29 launcher and a U.S. director, rather than the later Albatros system with the similar Aspide missiles of the Maestrale class. The highly automated machinery plant is mounted in four compartments: auxiliaries, gas turbines, reduction gearing, and diesel alternator sets. Six ships of the same class were ordered for Venezuela, four for Peru, and four for Iraq.

FRIGATES

◆ 2 Alpino class Bldr: C. N. del Tirreno, Riva Trigoso

F 580 Alpino (ex-Circe) Laid down L In serv. F 581 Carabiniere (ex-Climene) 27-2-63 10-6-67 14-1-68 F 581 Carabiniere (ex-Climene) 9-1-65 30-9-67 28-4-68

D: 2,000 tons (2,700 ft) S: 27 kts Dim: 113.3 (106.4 pp) × 13.3 × 3.80 (hull)
A: 6/76-mm 62-cal. DP (I × 6) — 1/305-mm Menon K113 ASW mortar (I × 1) — 6/324-mm ASW TT (III × 2) — 1/AB-212 helicopter

Electron Equipt: Radar: 1/SPS-12, 1/SPQ-2, 1/RTN-30X (NA-30 system), 3/RTN-10X (Argo systems), F 580 also: 1/MAD

Sonar: 1/SQS-43, 1/SQA-10 VDS EW: MM/SPR-A intercept, 2/SCLAR chaff RL (XX × 2)

M: CODAG: 4 Tosi OTV-320 diesels, 4,200 hp each; 2 Tosi-Metrovik G6 gas turbines, 7,700 hp each; 2 props; 31,800 hp

Electric: 2,400 kw Fuel: 275 tons Range: 4,200/17

Man: 19 officers, 228 men

Remarks: Fin stabilizers. Cruising, 22 knots on diesels. F 580 fitted with experimental MAD gunfire-control radar 1975.



Caribiniere (F 581) - showing VDS installation

G. Arra, 1982



Carabiniere (F 581)

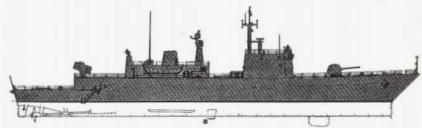
C. Martinelli, 1981

Note: The last Canopo-class frigate, Centauro (F 554), was stricken during 1984. The last two Carlo Bergamini-class frigates, Virgilio Fasan (F 594) and Carlo Margo Hini (F 595) were to be stricken during 1985.

CORVETTES

♦ 0 (+4+4+4) Minerva class Bldr: Italcantiere, Muggiano, and Riva Trigoso

| | Bldr | Laid down | L | In serv. |
|---------------|--------------|-----------|-------|----------|
| F 551 MINERVA | Riva Trigoso | 9-84 | * * * | 1986 |
| F 552 URANIA | | | | |
| F 553 DANÏADE | | | | |
| F 554 SFINGE | 4.4.4 | | | |
| F 555 DRIADE | | | | |
| F 556 CHIMERA | | 2.2.2 | | |
| F 557 FENICE | | 4.1.1 | | |
| F 558 SIBILLA | | 7.5.4 | | |



Minerva class

Italian Navy, 1984

D: 1,025 tons (1,300 fl)
 S: 24-25 kts
 Dim: 87.00 (80.00 pp) × 10.30 × . . .
 A: 1/Albatros SAM system (VIII × 1, 8 Aspide missiles) − 1/76-mm OTO Melara Compact DP − 6/324-mm ILAS-3 ASW TT (III × 2)

Electron Equipt: Radar: 1/MM/SPN-703 nav., 1/MM/SPS-774 combined air/surface search, 1/RTN-20X f.c. (Dardo E f.c.s.) Sonar: 1/Raytheon DE 1167 (L/F, hull-mounted) EW: Elettronica Newton active/passive suite, 2 Type 207/E chaff RL

M: 2 GMT BM 230.20 DVM diesels; 2 CP props; 11,000 hp Range: 3,500/18 Electric: 2,600 kVa Man: 9 officers, 112 men

Remarks: First four authorized 1983 to begin replacement of earlier corvettes; names for second planned group released 1985. Intended for surveillance, coastal escort, fisheries protection, training and search-and-rescue duties. Weight and space reserved for addition of Aspide reload facility, four Teseo-Otomat Mk 2 SSM, variable-depth sonar. Will have Selenia "Mini SADOC" combat data system, with two computers and three displays. Elsag NA-18 optronic GFCS for the 76-mm gun, with the Dardo E radar f.c.s. controlling the SAM system or the gun. Sonars will be the first to be built (though under license) in Italy. Fin stabilizers, satellite navigation systems fitted.

CORVETTES (continued)

4 Pietro de Cristofaro class

| | Bldr | Laid down | L | In serv. |
|----------------------------|-------------------------|-----------|----------|----------|
| F 540 PIETRO DE CRISTOFARO | C.N. del Tirreno | 20-4-63 | 29-5-65 | 19-12-65 |
| F 541 Umberto Grosso | Ansaldo, Livorno | 21-10-62 | 12-12-64 | 25-4-66 |
| F 546 Licio Visintini | C.R.D.A., Monfalcone | 30-9-63 | 30-5-65 | 10-8-66 |
| F 550 SALVATORE TODARO | Ansaldo, Livorno | 21-10-62 | 24-10-64 | 25-4-66 |



Licio Visintini (F 546)

L. & L. Van Ginderen, 6-84



Salvatore Todaro (F 550)

L. & L. Van Ginderen, 6-84

D: 850 tons (1,020 fl) S: 22 kts Dim: 80.37 (75.0 pp) × 10.28 × 2.80 (hull) A: 2/76-mm DP (I × 2) - 1/305-mm K113 Menon ASW mortar (I × 1)-

6/324-mm ASW TT (III × 2)

Electron Equipt: Radar: 1/SPQ-2, 1/Orion RTN-10X (OG-3 system) Sonar: 2/SQS-36 (1 hull, 1 VDS)

EW: MM/SPR-A intercept

M: 2 diesels (see Remarks); 2 props; 8,400 hp Fuel: 100 tons Range: 4,600/18 Man: 7 officers, 122 men

REMARKS: High-speed diesels; Fiat 3012 RSS on F 540, F 541, and F 550; Tosi on F 546, with reduction gears and Tosi-Vulcan hydraulic linkage. OG-3 gun director forward, U.S. Mk 51 director aft. The VDS uses an SQA-13 hoist. No VDS on F 540; no ASW TT on F 541.

• 4 Albatros class Bldr: Nav. Mec. Castellammare di Stabia (except F 542: Breda, Marghera-Mestre, Venice)

| | Laid down | L | In serv. |
|------------------------------|-----------|----------|----------|
| F 542 AQUILA (ex-Dutch Lynx) | 25-7-53 | 31-7-54 | 2-10-56 |
| F 543 Albatros | 1953 | 18-7-54 | 1-6-55 |
| F 544 ALCIONE | 1953 | 19-9-54 | 23-10-55 |
| F 545 AIRONE | 1953 | 21-11-54 | 29-12-55 |

D: 800 tons (950 ft) **S:** 19 kts **Dim:** 76.3 (69.49 pp) \times 9.65 \times 2.72 (hull) **A:** 3/40-mm AA (II \times 1, I \times 1 — except F 543: 2/40-mm II) — 2/Mk 11 Hedgehog (XXIV \times 2) — F 542, F 545: 6/324-mm ILAS ASW TT (III \times 2) — F 542, F 545: 1/d.c. rack

Electron Equipt: Radar: 1/SPQ-2—Sonar: QCU-2

M: 2 Fiat M 409 diesels; 2 props; 5,200 hp (3,500 sust.) Fuel: 100 tons Electric: 1,200 kw Range: 2,988/18 Man: 6 officers, 96 men

Remarks: Ships built with U.S. "Offshore" funds (ex-U.S. PC 1626, PC 1619, PC 1620, and PC 1921). One similar ship was delivered to The Netherlands (returned to Italy in 10-61 and commissioned 9-11-61) and four to Denmark. Originally had two 76-mm DP, two 40-mm AA (II × 1); rearmed 1963. F 543 and F 544 are equipped for minesweeping, having rubber dinghies, 2 paravanes, and equipment davits on the stern. All were to be decommissioned 1982-83, but will be retained until the Minerva class enters service.



Alcione (F 544)

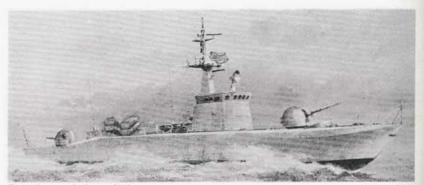
L. & L. Van Ginderen, 11-83

GUIDED-MISSILE PATROL BOATS

1 private-venture DA-360T design

Bldr: CNR, Muggiano In serv.

Laid down L SAETTIA 5-83 12-85



Saettia - artist's rendering

CNR, 1983

D: 330 tons normal (360 fl) S: 40 kts (375 sust.)

Dim: $51.70 (47.20 \text{ pp}) \times 8.10 \times ...$

A: 4/Otomat Mk 2 SSM-1/76-mm OTO Melara Compact DP-2/40-mm Breda Dardo AA (II × 1)

Electron Equipt: Radar: 1/RAN-12 L/X, 1/Orion RTN-10X f.c.

EW: Elettronica Farad A1 intercept; 2 Breda chaff RL M: 4 MTU 16V538 TB93 diesels; 4 props; 16,560 hp sust. Electric: 534 kw Range: 2,000/18 Endurance: 12 days Man: 3 officers, 28 men

REMARKS: Not a unit of the Italian Navy. Built in hopes of sales and to test concept. Has fin stabilizers. Elsag NA 21 weapons control system with RTN-10X radar has NA 12 optronic backup director. Selenia's IPN-10 combat data system.

 7 Sparviero-class hydrofoils Bldr: CNR, Muggiano (P 420: Alinavi, La Spezia)

| | Laid down | L | Delivered | In serv. |
|-----------------|-----------|----------|-----------|----------|
| P 420 Sparviero | 4-71 | 9-5-73 | | 15-7-74 |
| P 421 Nibbio | 1-8-77 | 29-2-80 | 10-11-80 | 7-3-82 |
| P 422 FALCONE | 1-10-77 | 27-10-80 | 1-3-82 | 7-3-82 |
| P 423 ASTORE | 1-7-78 | 20-7-81 | 6-8-82 | 5-2-83 |
| P 424 GRIFFONE | 15-11-78 | 1-12-81 | 16-9-82 | 5-2-83 |
| Р 425 Снеррю | 16-5-79 | 24-6-82 | 11-5-83 | 20-9-83 |
| P 426 CONDORE | 21-3-80 | 25-1-83 | 19-1-84 | 7-4-84 |

D: 63.0 tons (fl) S: 43 kts (heavy sea), 50 kts (calm sea)

Dim: 22.95 (24.56, foils retracted) × 7.01 (12.06 max. over foils) × 1.87 (1.45 over foils at speed, 4.37 over foils at rest)

A: 2 Otomat Mk II SSM (I×2)—1/76-mm OTO Melara Compact

Electron Equipt: Radar: 1/3RM7-250, 1/RTN-10X (NA-10 Mod. 3 system) M: CODOG: 1 Rolls-Royce Proteus 15 M560 gas turbine; 1 waterjet; 5,044 hp (P 420: 4,500); 1 G.M. 6V-53N diesel; 1 prop; 180 hp

Fuel: 11 tons Range: 1,050/8 (diesels); 400/45

Man: 2 officers, 7 men

Remarks: Prototype studied by the Alinavi Society, which was formed in 1964 by Boeing, U.S.A., the Italian government's I.R.I., and Carlo Rodriguez of Messina, builder of commercial hydrofoils. Six more (of eight planned) were ordered 1977. The three hydrofoils are raised when cruising, and the diesel engine is engaged. All-aluminum construction. Used for short-duration operations, have no berths. Design based on U.S. Tucumcari. F 421 onward have a later SPQ-701 surface-search radar, incorpo-

GUIDED-MISSILE PATROL BOATS (continued)



Griffone (P 424)

C. Martinelli, 5-84



Astore (P 423)

М 5554 GAETA

L. & L. Van Ginderen, 5-84

rating an IFF interrogator. All except P 420 have water injection to increase gas turbine power output, but they are basically underpowered. There are plans to replace the Proteus with a G.M. Allison 570 KF turbine producing 6,394 hp.

Note: The two Freccia-class convertible torpedo-gunboats have been stricken: Freccia (P 493 on 15-9-84 and Saetta (P 494) during 1985. Lampo-class torpedo boats Lampo (P 491) and Baleno (P 492) were stricken 31-3-83.

MINE WARFARE SHIPS

| ♦ 4 (+3+3) Le Spezia | rici-cla | ss mineh | unter/n | ninesweepers | Bldr: Int | ermari | ine, La |
|-------------------------|----------|----------|-------------|----------------|--------------|-----------|-------------|
| | Laid | L | In serv. | | Laid down | L | In serv. |
| M 5550 LERICI | 1978 | 3-9-82 | 4-5-85 | M 5555 Termoli | | | |
| M 5551 SAPRI | | | 1985 | M 5556 ALGHERO | | | |
| M 5552 Milazzo | | | 1986 | M 5557 Numano | | | |
| M 5553 VIESTE | | 2000000 | 1986 | M 5558 CROTONE | | 12-12/16/ | |

D: 470 tons (502 fl) S: 15 kts Dim: 49.98 (45.5 pp) × 9.56 × 2.63

A: 1/20-mm AA Electric: 887 kVA

Range: 2,500/12; 1,500/14 Man: 39 tot.

Electron Equipt: Radar: 1/3ST7/DG Sonar: SQQ-14

M: 1 GMT B230-8M diesel; 1 prop; 1,840 hp (2 retractable auxiliary thrusters;

M 5559 Viareggio

Remarks: First four ordered 4-78; six more, authorized 1980, will be longer and may be built at a new facility at Gaetta. Glass-reinforced, shock-resistant plastic construction



Lerici (M 5550) - on trials

C. Martinelli, 10-84



Milazzo (M 5552)

G. Arra, 1985

throughout. Hull material 140-mm thick. To carry MIN-77 remote-controlled minehunting devices as well as conventional sweep gear. SQQ-14 is a high-frequency minehunting sonar with a retractable transducer. While minehunting, speed is 7 knots, using the two drop-down, shrouded thrusters. Carry 6-7 divers, who use CAM mine destructor charges. One Pluto remote-controlled submersible disposal and one MIN locating submersible may be carried by each ship. Range at 12 knots can be extended to 4,000 nautical miles by using the passive roll stabilization tanks to carry fuel. Four also ordered for Malaysia. Delivery of these ships has been delayed by the presence of a bridge blocking the seaward exit from the yard and by a vigorous foreign sales program that apparently takes precedence over Italian Navy requirements.

4 ex-U.S. Agile-class fleet minesweepers

| | Bldr | L | In serv. |
|------------------------------|------------------------|----------|----------|
| M 5430 SALMONE (ex-MSO 507) | Martinolich, San Diego | 19-2-55 | 15-5-56 |
| M 5431 STORIONE (ex-MSO 506) | Martinolich, San Diego | 13-11-54 | 23-2-56 |
| M 5432 SGOMBRO (ex-MSO 517) | Tampa Marine | 1954 | 12-5-57 |
| M 5433 SQUALO (ex-MSO 518) | Tampa Marine | 1955 | 20-6-57 |



Salmone (M 5430)

L. & L. Van Ginderen, 1984

D: 665 tons (750 fl) S: 14 kts Dim: 52.27 × 10.71 × 4.0 (fl)

A: 1/40-mm AA

Electron Equipt: Radar: 1/3ST7/DG - Sonar: UQS-1

Remarks: Had been scheduled for disposal 1982-83. Wooden construction.

MINE WARFARE SHIPS (continued)

◆ 21 U.S. Adjutant-class minesweepers (9 converted as minehunters*)

| | Bldr | In serv. |
|-------------------------------|------------------------|----------|
| M 5504 Castagno (ex-MSC 74)* | H. Grebe, New York | 7-8-55 |
| M 5505 CEDRO (ex-MSC 88)* | Berg SY, Wash. | 9-11-53 |
| M 5508 Frassino (ex-MSC 89)* | Berg SY, Wash. | 15-2-54 |
| M 5509 Gelso (ex-MSC 75)* | H. Grebe, New York | 8-3-54 |
| M 5510 LARICE (ex-MSC 82) | Lake Union DD, Wash. | 21-1-54 |
| M 5516 PLATANO (ex-MSC 136)* | Bellingham BY, Wash. | 16-10-54 |
| M 5519 Mandorlo (ex-MSC 280)* | Tacoma BY, Wash. | 16-12-60 |
| M 5521 BAMBU (ex-MSC 214) | CRDA, Monfalcone | 8-9-56 |
| M 5522 EBANO (ex-MSC 215) | CRDA, Monfalcone | 8-11-56 |
| M 5523 Mango (ex-MSC 216)* | CRDA, Monfalcone | 5-12-56 |
| M 5524 Mogano (ex-MSC 217) | CRDA, Monfalcone | 9-1-57 |
| M 5525 PALMA (ex-MSC 238)* | CRDA, Monfalcone | 28-2-57 |
| M 5527 SANDALO (ex-MSC 240) | CRDA, Monfalcone | 17-4-57 |
| M 5531 Agave | CRDA, Monfalcone | 1-2-56 |
| M 5532 Alloro | CRDA, Monfalcone | 1-2-56 |
| M 5533 Edera | CRDA, Monfalcone | 7-56 |
| M 5535 Gelsomino | Baglietto, Varezze | 5-56 |
| M 5536 GIAGGIOLO | Picchiotti, Viareggio | 6-56 |
| M 5538 Loto* | Celli, Venice | 21-1-56 |
| М 5540 Тімо | Costaguta, Voltri | 8-56 |
| M 5542 Vischio | C. Mediterraneo, Piera | 8-56 |
| | | |



Cedro (M 5505) - standard minehunter configuration

L. & L. Van Ginderen, 5-84



Gelsomino (M 5535)

L. & L. Van Ginderen, 9-84



Mandorlo (M 5519) - minehunter with unique bridge

C. Martinelli, 1983



Loto (M 5538) — prototype minehunter conversion, with short forecastle
L. & L. Van Ginderen, 9-84

D: 375 tons (405 fl) **S:** 12 kts **Dim:** 43.92 (42.1 pp) \times 8.23 \times 2.68 **A:** 2/20-mm AA (II \times 1)

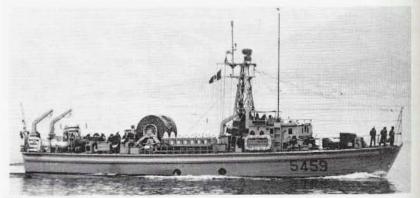
Electron Equipt: Radar: 1/3ST7/DG — (minehunters: 1/MM/SPN-703) Sonar: UQS-1 (minehunters: SQQ-14)

M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp (see Remarks) Fuel: 40 tons Range: 2,500/10 Man: 2 officers, 29 men (minehunters: 3 officers, 38 men)

Remarks: M 5531 to M 5542 were built with "Offshore Procurement" funds and did not receive MSC-series hull numbers; the others were built under the U.S. Military Aid Program. M 5519 is of a later design than the others, with a lower bridge and larger stack; she was converted as a minehunter in 1975 and displaces 370 tons; her dimensions are $44.12 \times 8.50 \times 2.30$, and her two 900-hp diesels provide a 12-kt max. speed. Eight others have since been similarly altered, with the forecastle being lengthened; they have a standard displacement of 354.5 tons and have a single 310-hp Voith-Schneider vertical cycloidal prop for minehunting. The minehunters' main engines produce 810 hp total, for 11.4 kts. The minehunters employ the Pluto remote-controlled submersible, capable of 4.5-kt speeds; the divers aboard use CAM-T destruction charges. All have wooden hulls and nonmagnetic fittings. M 5521 to M 5527 have Fiat diesels. Mirto (ex-M 5539) and Pioppo (ex-M 5515) have been converted to survey ships. Noce (M 5511) was stricken 30-9-83. Twelve others were discarded 1974 to 1980.

• 5 Aragosta-class inshore minesweepers

| | Bldr | L | In serv. |
|-----------------------------|-----------------------|---------|----------|
| M 5450 Aragosta (ex-MSI 55) | CRDA, Monfalcone | 8-56 | 19-7-57 |
| M 5452 ASTICE (ex-MSI 61) | CRDA, Monfalcone | 16-1-57 | 19-7-57 |
| M 5459 MITILO (ex-MSI 74) | Picchiotti, Viareggio | 1-6-57 | 11-7-57 |
| M 5463 Polipo | Costaguta, Voltri | 15-6-57 | 10-7-57 |
| M 5464 PORPORA (ex-MSI 65) | Costaguta, Voltri | 1-6-57 | 10-7-57 |



Mitilo (M 5459)

L. & L. Van Ginderen, 1982

D: 120 tons (178 ft) S: 13.5 kts Dim: 32.35 × 6.47 × 2.14 A: None Electron Equipt: Radar: 1/MLN-1A

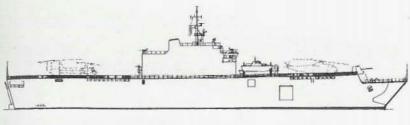
M: 2 Fiat/MTU MB 820D diesels; 2 props; 1,000 hp Electric: 340 kw Fuel: 15 tons Range: 2,000/9 Man: 2 officers, 13 men

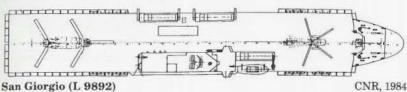
Remarks: Based on British "Ham"-class design. Originally 20 in class. Built with U.S. Military Assistance Program funds. Wooden construction. Single 20-mm AA fwd removed. M 5450 has a deckhouse in place of the sweep reel and is used in support of frogmen.

AMPHIBIOUS WARFARE SHIPS

• 0 (+2) San Giorgio-class amphibious warfare ships

| | Bldr | Laid down | L | In serv. |
|--------------------|-------------------|-----------|---|----------|
| L 9892 SAN GIORGIO | CNR, Riva Trigoso | 9-85 | | * * * |
| L 9893 San Marco | * * * | | | |





CNR, 1984

D: 7,665 tons (fl) S: 21 kts Dim: 130.00 (118.00 pp) × 20.50 × 5.00

A: 1/76-mm OTO Melara DP - 2/20-mm AA (I × 2) - 5/CH-47-sized helicopters

Electron Equipt: Radar: 1/. . . nav, 1/RAN-10S, 1/RTN-30X f.c.

EW: . . . - TACAN: . M: 2 GMT A420.12 12-cyl., 4-stroke diesels; 2 CP props; 10,146 hp Range: 7,500/16 Fuel: 400 tons Man: 146 crew + 400 troops

Remarks: L 9892, initially requested for 1980 Budget, was approved in 1983 and ordered 5-3-84. Second ship remains a projection, planned to be paid for with disaster relief rather than defense funds. Will be able to carry 3 LCM in docking well aft, plus 3 LCVP in davits on the flight deck. The hangar will accommodate 5 CH-47 Chinook helicopters; at its forward end is a vehicle deck that can hold up to 36 tracked vehicles, and the ship can beach and use its bow ramp to land personnel and vehicles. There will be stowage for 99 m3 refrigerated stores and 300 m3 dry stores, and the ship will carry 60 tons of aviation fuel. The 76-mm gun will not be of the Compact model, but rather an older-model weapon from a discarded frigate.

These will be versatile vessels, capable of use in amphibious assault, disaster relief, and, with Sea King or EH.101 helicopters embarked, for ASW.

* 2 ex-U.S. De Soto County-class LSTs

Avondale SY, L 9890 GRADO 28-2-57 (ex-De Soto County, LST 1171) New Orleans, La. L 9891 CAORLE Newport News SB & DD 5-9-57 (ex-York County, LST 1175)



Grado (L 9890)

1983

M: 6 Fairbanks-Morse 38C81/4 diesels; 2 CP props; 14,400 hp

Man: 13 (L 9891: 11) officers, 147 men + 550 troops

Remarks: Three Mk 51 gunfire-control systems, two forward, one aft. Carry four LCVPs each. Leased 15-7-72, purchased outright 1981. Planned for disposal on completion of San Giorgio and San Marco.

Note: The transport Andrea Bafile (L 9871, ex-U.S. Navy seaplane tender St. George, AV 16), in reserve since 1976, is reported to have been stricken in 1981.

* 4 U.S. LCVP class

MTP 9748 MTP 9749 MTP 9750 MTP 9751

D: 7 tons (11 fl) S: 9 kts Dim: 10.9 × 3.2 × 1.03 M: 1 Gray Marine 64 HN9 diesel; 165 hp Range: 110/9

Remarks: Transferred 1953. Two stricken 1979, three in 1980, and 28 others in 1982.

HYDROGRAPHIC SHIPS

 1 Ammiraglio Magnaghi class Bldr: C. N. del Tirreno, Riva Trigoso

Laid down In serv. 13-6-73 11-9-74 A 5303 Ammiraglio Magnaghi 2-5-75



Ammiraglio Magnaghi (A 5303)

L. & L. Van Ginderen, 10-84

D: 1,550 tons (1,700 fl) S: 17 kts Dim: 82.70 (76.80 pp) × 13.70 × 3.60 A: 1/40-mm-1/AB-212 helicopter Electron Equipt: Radar: 1/2RM-20

M: 2 GMT B306 SS diesels; 1 CP prop; 3,000 hp; 1 electric auxiliary engine; 240

Range: 5,500/12; 4,200/16 Man: 15 officers, 120 men, 15 scientists.

Remarks: Equipped for survey and oceanographic studies and for search-and-rescue duties. Passive tank stabilization. Bow-thruster. Part of 1972 program. Has chemistry, physical, oceanography, photo, and hydrology labs, computerized data loggers, underwater TV.

2 ex-U.S. Adjutant-class minesweepers

Bldr In serv. Breda, Marghera A 5306 Mirto (ex-M 5539) 4-8-56 A 5307 Pioppo (ex-M 5515, ex-MSC 135) Bellingham SY, Washington 30-7-54



Mirto (A 5306)

G. Gyssels, 9-82

Remarks: Characteristics generally as for minesweeper version; displacement: 322 tons std. Superstructure enlarged, stack raised. Both can carry two 20-mm AA (II × 1). Man: 3 officers, 31-35 men. Special survey equipment includes Elac Deneb Special scanning sonar, Atlas scanning sonar, TORAN F, Raydist, Mini Ranger III and LORAN-C. To be replaced by two new 1,000-ton ships.

REPLENISHMENT OILERS

 2 Stromboli-class oilers Bldr: C. N. del Tirreno, Riva Trigoso

Laid down A 5327 STROMBOLI 1-10-73 20-2-75 31-10-75 18-11-78 1-7-74 4-6-77 A 5329 Vesuvio



Stromboli (A 5327) - with ELINT hut on helo deck

REPLENISHMENT OILERS (continued)



Vesuvio (A 5329)

L. & L. Van Ginderen, 1-82

D: 4,200 tons (8,706 fl) S: 19.5 kts

Dim: 129.0 (118.5 pp) × 18.0 × 6.5 (3.17 light)

A: 1/76-mm DP

Electron Equipt: Radar: 1/3RM7-250, 1/Orion RTN-10X

M: 2 GMT C428 SS diesels: 1 LIPS 4-bladed CP prop; 11,200 hp (9,600 sust.)

Electric: 2,350 kw Range: 10,000/16 Man: 10 officers, 114 men

Remarks: Cargo: 1,370 tons fuel oil, 2,830 tons diesel, 480 tons aviation fuel, and 200 tons miscellaneous (torpedoes, missiles, projectiles, spare parts). Capable of serving two units simultaneously alongside while underway with constant-tension fueling rigs, each capable of pumping 650 m³/hr of fuel oil and 480 m³/hr of diesel fuel or aviation fuel. Can also refuel over the stern at the rate of 430 m³/hr. There are also constant-tension cargo transfer rigs on either side, each capable of transferring 1.8-ton loads, as well as two stations for lighter loads. The ships can also replenish via helicopters, although they do not have hangars. Two single 40-mm AA can be added abreast the stack. Twenty repair-party personnel can also be accommodated, and the ships can carry up to 250 passengers. NA-10 Argo GFCS. Sister built for Iraq.

EXPERIMENTAL SHIPS

◆ 1 new construction Bldr: Picchiotti, Viareggio

A. . . N. . .

REMARKS: Ordered 3-84; no further data available.

• 1 ex-landing ship Bldr: Taranto Naval Base

Laid down L In serv. A 5314 Quarto 19-3-66 18-3-67 18-3-68



Quarto (A 5314) - bow door open

Cdr. A. Fraccaroli, 1980

D: 764 tons (980 ft) **S:** 11 kts **Dim:** $66.6 \times 9.55 \times 1.95$ **A:** 2/Otomat Mk 2 SSM (I × 2) — 2/40-mm AA (II × 1)

Electron Equipt: Radar: 1/3ST-7, 1/SPQ-2, 1/tracking radar M: 3 diesels; 3 props; 2,280 hp Range: 1,300/13 Man: 4 officers, 38 men

Remarks: Unsuccessful landing ship used as a trials ship since early 1970s. Blunt bow restricts speed and seaworthiness. Sisters Marsala (hull used as a pontoon) and Caprara canceled. Retains visor-type bow door.

• 1 converted fishing boat B

Bldg: C. N. Castracani, Ancona

A 3315 BARBARA

D: 185 tons (195 fl) S: 12 kts Dim: 30.50 × 6.30 × 1.50

M: 2 diesels; 2 props; 600 hp Man: 7 tot.

REMARKS: Purchased 1975. Used for oceanographic research. Has 7.5-ton crane.

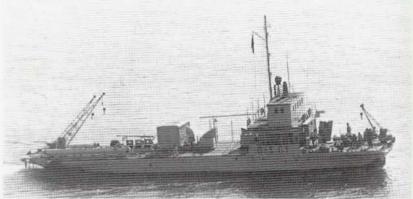
◆ 1 Aragosta-class former inshore minesweeper

A 5305 MURENA (ex- . . .)

Remarks: Characteristics generally as for minesweeper version. New superstructure, with enclosed bridge. Stern area bare.

♦ 1 former minelayer (In serv. ca 1939-41)

GIS 61



GIS 61

C. Martinelli, 1983

D: 230 tons **S:** 7 kts **Dim:** . . . × . . . × . . . A: 1/533-mm TT

REMARKS: Used for torpedo firing trials.

SUPPORT TENDERS

♦ 1 supply ship Bldr: Lake Washington SY, Houghton, Washington

Laid down L In serv. A 5301 PIETRO CAVEZZALE (ex-Oyster Bay, 17-4-42 23-5-43 17-11-43 AGP 6, ex-AVP 28)



Pietro Cavezzale (A 5301)

G. Gyssels, 3-82

D: 1,766 tons (2,800 fl) **S:** 16 kts **Dim:** $94.6 \times 12.58 \times 3.7$

A: 1/76.2-mm 50-cal. DP - 2/40-mm AA (II × 1)

Electron Equipt: Radar: 1/3RM7-250, 1/SPS-6C

M: 2 Fairbanks-Morse 38D8\% \times 10 diesels; 2 props; 6,000 hp Electric: 600 kw Fuel: 400 tons Range: 10,000/11 Man: 7 officers, 105 men

Remarks: Transferred 23-10-57. Serves amphibious ships and small boats in a general support/repair tender rôle.

SALVAGE SHIPS

• 1 salvage ship

Bldr Laid down L In serv.
A 5309 Anteo C. N. Breda, Mestre 1977 11-11-78 31-7-80
D: 2,178 tons (3,070 fl) S: 18.3 kts Dim: 98.4 (93.0 pp) × 15.8 × 5.18

A: 2/20-mm AA (II × 1) — 1/AB-212 helicopter Electron Equipt: Radar: 1/3ST-7, 1/3RM-20

M: 3 GMT A-230-12V diesels (4,050 hp each), electric drive (2 motors); 1 prop; 6,000 hp (5,360 sust.)

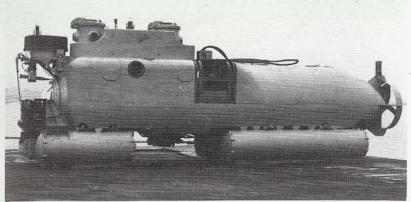
Fuel: 270 tons Range: 4,000/14 Man: 9 officers, 104 men



Anteo (A 5309) - hangar retracted

C. Martinelli, 1981

SALVAGE SHIPS (continued)



Salvage submersible Usel on Anteo (A 5309)

A. Fraccaroli, 2-81

Remarks: Ordered 1977. Carries U.S. Navy-style submarine rescue equipment, including a McCann rescue bell capable to 150 meters, and two decompression chambers. A Type MSM-1/S, 22-ton salvage submersible named *Usel* is also carried; $9.0 \times 2.5 \times 2.7$ meters, it can submerge to 600 meters and has a 120-hour autonomous endurance with a 4-kt max. speed. The ship supports saturation diving to 350 meters and has a 27-ton bollard pull at 10 kts. A bow-thruster is fitted.

• 1 U.S. AN 93-class former netlayer

Bldr Laid down L In serv.
A 5304 ALICUDI (ex-AN 99) Ansaldo, Livorno 4-54 11-7-54 1955



Alicudi (A 5304) - with experimental radar in place of 1/20-mm AA

G. Gyssels, 1985

D: 680 tons (832 fl) **S:** 14 kts **Dim:** $46.28 \times 10.26 \times 3.2$

A: 1/40-mm AA — 4/20-mm AA (I × 4) Electron Equipt: Radar: 1/3ST7

M: 2 Maybach MBA 6H/D650/655 diesels, electric drive; 1 prop; 1,200 hp

Laid down

1943

Fuel: 105 tons Man: 3 officers, 41 men

Remarks: Sister *Filicudi* (A 5305) stricken 1979. Used for salvage work and mooring-buoy laying.

• 1 former submarine rescue ship

Bldr: CNR, Ancona

A 5310 PROTEO (ex-Perseo)

L In serv. 1944 24-8-51

A 5310

Proteo (A 5310)

C. Martinelli, 1981

D: 1,865 tons (2,178 fl) S: 16 kts Dim: 75.70 × 11.70 × 6.10 A: 2/20-mm AA (I×2) Electron Equipt: Radar: 1/3ST-7

M: 2 Fiat diesels; 1 prop; 4,800 hp

Range: 7,500/13 Man: 8 officers, 106 men

Remarks: Seized by German forces after launch, towed to Trieste; returned to Ancona, and fitting out resumed 1949. Relieved by *Anteo* (A 5309) as submarine rescue ship, but is retained as an ocean tug and salvage ship. Has submersible decompression chamber, extensive divers' support equipment, and 4-point mooring capability. Refitted 1984-85 with new stack and an electrohydraulic crane.

WATER TANKERS

♦ 1 (+1) new construction

Bldr: Ferbex, Naples (L: 1984)

A. . . TEVERE

D: 2,130 tons (fl) S: . . . Dim: 70.40 × 10.20 × 4.50 M: 1 GMT 420 diesel; 1 prop; . . . hp Man: . . .

Remarks: Two new water tankers of 1,500 tons capacity were authorized in 1982 for delivery 1983, but only one has been ordered.

• 1 Piave class

Bldr L In serv.
A 5354 Piave Orlando, Livorno 18-12-71 23-5-73



Piave (A 5354)

L. & L. Van Ginderen, 3-81

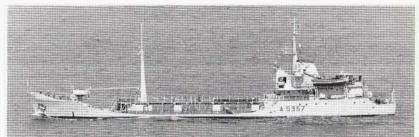
D: 5,003 tons (fl) S: 13.7 kts Dim: 97.8 (86.7 pp) $\times 13.4 \times 5.9$ A: Removed Electron Equipt: Radar: 1/3RM-7 M: 2 diesels; 2,560 hp Cargo capacity: 3,500 tons Range: 1,500,12 Man: 5 officers, 42 men

Remarks: Sister Tevere (A 5355) sold commercially, 1976. Formerly carried 4/40-mm AA (II \times 2).

♦ 3 Basento class Bldr: Inma, La Spezia

A 5356 BASENTO (In serv. 19-7-71) A 5357 Bradano (In serv. 29-12-71)

A 5357 BRADANO (In serv. 29-12-7.) A 5358 Brenta (In serv. 18-4-72)



Bradano (A 5357)

C. Martinelli, 7-84

D: 1,930 tons (fl) S: 12.5 kts Dim: 68.65 × 10.07 × 3.90 A: Removed Electron Equipt: Radar: 1/3RM-7 M: 2 Fiat LA-230 diesels; 1,730 hp Cargo Capacity: 1,200 tons Range: 1,650/12.5 Man: 2 officers, 25 men

REMARKS: Can carry 2/20-mm AA (I × 2)

• 1 small water tanker

A 5359 BORMIDA (In serv. . . .)



Bormida (A 5359)

C. Martinelli

WATER TANKERS (continued)

D: 736 tons (fl) S: . . . Dim: 40.2 × 7.2 × 3.2 M: 1 diesel; . . . hp Cargo: 260 tons Man: 6 tot.

1 small water tanker

A 5374 Mincio (In serv. 1929) — 645 tons; 23 men

Note: Ex-U.S. Army 327E-class water tankers Adige (A 5369), Ticino (A 5377), and Tanaro (A 5376) were scheduled to be stricken on completion of the new tanker Tevere in 1985. Also in service are 5 small harbor water lighters of 200 tons full load displacement: GIS 185, 500, 501, 502 and 507.

TRAINING SHIPS

Note: The cruiser Ciao Duilio (C 554) serves as a training ship also.

1 sail-training ship

Bldr: Nav. Mec. Castellammare

Laid down

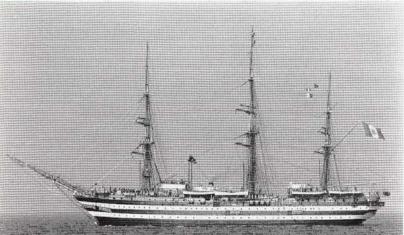
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12-5-30

22-2-31 15-5-31

In serv.

A 5312 Amerigo Vespucci



Amerigo Vespucci (A 5312)

P. Voss, 8-83

D: 3,545 tons (4,186 fl) S: 10 kts

Dim: 101.00 over bow sprit/82.38 (70.72 pp) × 15.56 × 6.7

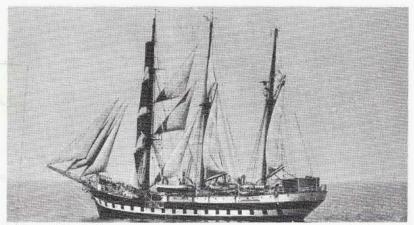
A: 4/40-mm AA (I × 4) - 1/20-mm AA

M: 2 Tosi E6 diesels, electric drive; 1 prop; 1,900 hp Range: 5,450/6.5 Man: 13 officers, 228 men, 150 cadets

Remarks: Sail area: 3,000 m2. Steel construction, including masts. Refitted 1984.

♦ 1 sail-training barkentine Bldr: Dubigeon, France (In serv. 1920)

A 5311 PALINURO (ex-Cdt Louis Richard)



Palinuro (A 5311)

A. Fraccaroli

D: 1,042 tons (1,341 fl) **S**: 10 kts **Dim**: 68.9 (59.0 pp) \times 10.1 \times 4.8 A: 2/76-mm (saluting battery) M: 1 M.A.N. G8V23.5/33 diesel; 450 hp Range: 5,300/7.5 Man: 4 officers, 44 men

REMARKS: Former French cod-fishing craft bought in 1951, refitted and recommissioned 16-7-55. Steel hull.

• 1 sail-training yawl Bldr: Costaguta, Genoa (In serv. 5-1-61)

A 5316 Corsaro II

D: 41 tons Dim: 20.9 × 4.7 M: 1 auxiliary engine; 96 hp

Man: 2 officers, 14 men

Remarks: Based at Naval Academy, Livorno.

♦ 1 RORC-class cruising yacht

Bldr: Sangermani, Chiavari (In serv. 7-10-65)

A 5313 STELLA POLARE

D: 41 tons (47 fl) S: . . . Dim: $20.9 \times 4.7 \times 2.9$ M: 1 Mercedes-Benz diesel; 1 prop; 96 hp Man: 2 officers, 4 men

Remarks: Sail area: 197 m2. Based at Naval Academy, Livorno.

• 1 sail-training yawl

Bldr: Baglietto (In serv. 1948)

A 5302 CAROLY

D: . . . S: 9 kts Dim: 23.75 × 4.6 × . . .

M: . . . Man: . . .

SERVICE CRAFT

◆ 1 yacht/ambulance craft

Bldr: Picchiotti, Viareggio

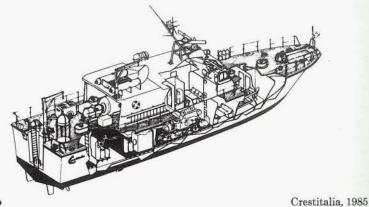
R. Paolucci (In serv. 12-9-70)

D: 70 tons (fl) **S:** 21.3 kts **Dim:** $27.72 \times 7.40 \times ...$ M: 2 diesels; 2 props; . . . hp Man: 1 officer, 7 men

Remarks: White-painted, streamlined yacht, with red crosses painted on sides.

• 2 diving tenders Bldr: Crestitalia, Ameglia, La Spezia (In Serv. 5-85)

MARIO MARINO ALCIDE PEDRETTI



Marino

D: 69.5 tons (fl) S: 25 kts Dim: 26.0 × 6.9 × 1.5

M: 2 Isotta-Fraschini ID36SS12V diesels; 2 props; 3,040 hp Range: 500/25 Man: . . .

Remarks: Have 2 nav. radars, diver's decompression chambers, recovery recess with davit and divers' stage at stern. Glass-reinforced plastic construction.

Bldr: Crestitalia, Ameglia, La Spezia (In serv. ◆ 4 torpedo-recovery craft 1984)

N. . . N. . . N. . . N. . .

D: . . . S: 23 kts Dim: 11.65 × 3.9 × .

M: 2 diesels; 2 props; 470 hp Range: 250/20 Man: . . .

Remarks: Can stow 3 torpedoes. Glass-reinforced plastic construction.

♦ 9 ex-British LCT(3)-class tenders (In serv. 1943-44

A 5301 MTF 1301 A 5335 MOC 1205 A 5331 MOC 1201 A 5337 MOC 1207 A 5332 MOC 1202 A 5362 MTF 1302 A 5363 MTF 1303 A 5333 MOC 1203 A 5334 MOC 1204



MOC 1201 (A 5331) - torpedo retriever

G. Arra, 1981

SERVICE CRAFT (continued)



MTF 1303 (A 5363)

L. & L. Van Ginderen, 1980

D: MOC series: 711-752 tons (fl); MTF series: 414 tons (fl) S: 9 kts

Dim: 58.25 to $59.50 \times 9.22 \times 2.0 - 2.2$ **A:** 2/20-mm AA (I × 2; not in all)

M: 2 diesels; 2 props; 1,000 hp Man: 1-2 officers, 20-26 men

Remarks: MOC 1201 is used for torpedo recovery; MOC 1207 is an ammunition transport; the remainder serve as repair craft for minesweepers and small combatants. The bow door/ramp has been welded closed.

♦ 1 ex-German MFP-D cargo lighter, former landing craft (In serv. 1942)

A 5341 MTC 1101

D: 218 tons (fl) **S:** 10 kts **Dim:** $49.8 \times 6.6 \times 1.12$

A: 2/20-mm AA M: 3 Deutz diesels; 3 props; 450 hp Range: 540/9

Remarks: Built 1942. Can carry 150 tons cargo; beaching capability retained. Can lay

♦ 4 MZ-class cargo lighters (In serv. 1942)

A 5344 MTC 1004 A 5345 MTC 1005 A 5346 MTC 1006 A 5350 MTC 1010



MTC 1006 (A 5346)

G. Arra, 1982

D: 218 tons (fl) S: 10.5 kts Dim: $47.0 \times 6.55 \times 1.13$ A: 2/20-mm AA M: 3 Deutz diesels; 3 props; 450 hp Man: 15-16 tot.

Remarks: Former Italian-built landing craft. Similar to MFP-D class, but hull has sheer fore and aft. Can carry 150 tons cargo. MTC 1005 can lay mines. Sisters MTC 1007-1009 (A 5347-5350) stricken 1983.

SEAGOING TUGS

♦ 2 Atlante class Bldr: Visitini, Donada (Both in serv. 14-8-75)

A 5317 ATLANTE A 5318 PROMETEO



Atlante (A 5317)

L. & L. Van Ginderen, 9-83

D: 478 tons (750 fl)
 S: 13.5 kts
 Dim: 38.9 × 9.6 × 3.70
 M: 1 Tosi QT 320/8SS diesel; 1 CP prop; 3,000 hp
 Man: 25 tot.

♦ 2 U.S. Army 293-design class

A 5350 Colosso (ex-LT 214) A 5321 Forte (ex-LT 159)



Forte (A 5321)

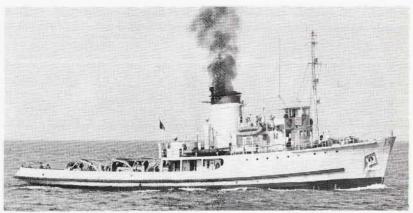
L. & L. Van Ginderen, 9-83

D: 525 tons (835 fl) S: 11 kts Dim: 38.6 × 8.53 × 3.89 M: 2 Fairbanks-Morse 38D8% diesels; 2 props; 1,690 hp Fuel: 112 tons Range: 3,800/8

REMARKS: Built during World War II; transferred 1948.

◆ 1 San Giusto class Bldr: CNR, Palermo, (In serv. 1940)

A 5326 San Giusto



San Giusto (A 5326)

L. & L. Van Ginderen, 11-82

D: 370 tons (486 fl) **S:** 12 kts **Dim:** $38.7 \times 7.1 \times 3.8$ **M:** Triple-expansion reciprocating steam; 900 hp

♦ 2 Gagliardo class

A 5322 GAGLIARDO 1938 A 5323 ROBUSTO 1939



Robusto (A 5323)

C. Martinelli, 1980

D: 389 tons (506 fl) **S:** 8 kts **Dim:** $33.2 \times 7.1 \times 3.6$ **M:** Triple-expansion reciprocating steam; 850 hp

COASTAL TUGS

• 4 . . . class Bldr: C. N. Ferrari, La Spezia

| | Laid down | L | In serv. |
|--------------------|-----------|-------|----------|
| A 55 Porto Ferraio | 7-84 | 12-84 | 21-7-85 |
| A N | | | |
| A N | | | |
| A N | | | |

D: 658 tons (fl) S: 14 kts Dim: 38.95 × 9.85 × 3.76 M: 2 GMT BL230 diesels; 1 CP prop; 3,264 hp Man: . . .

REMARKS: 45-ton bollard pull. 2/170 m³/hr water monitors, 23-ton capacity foam tank.

Bldr: DePoli SY, . . . (In serv. 1984-85) 5 Panaria class

A. . . PANARIA A. . . N. . . A. . . N. . .

A. . . N. . . A. . . N. . .

D: 412 tons (fl) **S**: 11.5 kts **Dim**: 32.36 (28.00 pp) \times 8.50 \times 3.32

M: 1 GMT B230.8 diesel; 1 prop; 1,600 hp Fuel: 46 tons

Range: 1,800/11.5 Man: 12 tot.

Remarks: Ordered 2-6-83.

◆ 2 Ercole class (In serv. 1971)

A 5388 ERCOLE A 5394 VIGOROSO

D: 506 tons (fl) S: 8 kts Dim: 33.2 × 7.1 × 3.6

M: Diesels; 850 hp

Remarks: Flushed-deck diesel version of Gagliardo class.

• 2 Porto d'Ischia class Bldr: CNR, Riva Trigoso (In serv. 1969-70)

Y 436 Porto d'Ischia Y 443 Riva Trigoso



Porto d'Ischia (Y 436)

G. Arra, 1982

D: 250 tons (296 fl) **S:** 12 kts **Dim:** $25.5 \times 7.1 \times 3.3$ M: 1 diesel; 1 CP prop; 850 hp

SMALL HARBOR TUGS

• 13 new construction Bldr: (A) C. N. Vittoria, Adria; (B) C. N. Ferrari, La Spezia; (C) CINET, Malfetta

| | Bldr | In serv. | | Bldr | In serv. |
|--------------|------|----------|----------|------|----------|
| Y 478 RP 125 | A | 1983 | Y RP 132 | C | 7-7-84 |
| Y 479 RP 126 | A | 24-9-83 | Y RP 133 | C | 3-11-84 |
| Y 480 RP 127 | В | 29-3-84 | Y RP 134 | C | 85 |
| Y RP 128 | В | 4-84 | Y RP 135 | | |
| Y RP 129 | В | 5-6-84 | Y RP 136 | | 1 1:1 |
| Y RP 130 | В | 10-8-84 | Y RP 137 | | |
| Y RP 131 | В | 28-8-84 | | | |

D: 120 tons (fl) **S:** 9.5 kts **Dim:** 19.85 (17.00) \times 5.20 \times 2.10 M: 1 Fiat AIFO 828-SM diesel; 1 prop; 368 hp Man: 3 tot.

REMARKS: First six ordered 18-8-83. 76 grt.

• 11 RP 113 class Bldr: Visitini, Donada (In serv. 1978-1981)

| | In serv. | | In serv |
|--------------|----------|--------------|---------|
| Y 463 RP 113 | 1978 | Y 470 RP 119 | 1980 |
| Y 464 RP 114 | 1980 | Y 471 RP 120 | 1980 |
| Y 465 RP 115 | 1980 | Y 472 RP 121 | 1980 |
| Y 466 RP 116 | 1980 | Y 473 RP 122 | 1980 |
| Y 468 RP 118 | 1980 | Y 474 RP 123 | 1980 |
| | | V 475 RP 124 | 1981 |

Remarks: Characteristics similar to RP 101 class below, but have a larger superstructure. RP 117 (Y 467) lost, date not available.



RP 127

C. Martinelli, 1984

| ♦ 12 RP-101 | class Blo | dr: CN Visitini-Loreo, Donado (In serv. 1972-75) |
|--------------|--------------|--|
| Y 403 RP 101 | Y 408 RP 105 | Y 456 RP 109 |
| Y 404 RP 102 | Y 410 RP 106 | Y 458 RP 110 |
| Y 406 RP 103 | Y 413 RP 107 | Y 460 RP 111 |
| Y 407 RP 104 | Y 452 RP 108 | Y 462 RP 112 |



RP 110 (Y 458)

C. Martinelli, 1980

D: 36 tons (75 fl) S: 12 kts Dim: 18.8 × 4.5 × 1.9 M: 1 diesel; 500 hp

Note: Earlier harbor tugs have been replaced by new construction.

MISCELLANEOUS SERVICE CRAFT

Remarks: There are a number of self-propelled and non-powered service craft in use, most with alphanumeric (non-NATO) pendant numbers denoting their functions. Insufficient information is available for a presentation in these pages.

FLOATING DRY DOCKS

13 miscellaneous

| | In serv. | Capacity | | In serv. | Capacity |
|--------|----------|----------|--------|----------|----------|
| GO 52 | 1979 | 6,000 | GO 17 | 1917 | 500 |
| GO 51 | 1971 | 2,000 | GO 11 | 1911 | 2,700 |
| GO 23 | 1935 | 1,000 | GO 10 | 1900 | 2,000 |
| GO 22 | 1935 | 1,000 | GO 8 | 1904 | 3,800 |
| GO 20 | 1935 | 1,600 | GO 5 | 1893 | 100 |
| GO 18B | 1920 | 600 | GO 1 . | 1942 | 1,000 |
| GO 18A | 1920 | 800 | | | 7,5 |

Remarks: GO 52 is 150.5 m long by 29.6 m (21.6 m internal width).

PORT CAPTAIN CORPS

(Corpo delle Capitanere di Porto)

In operation in 1984 were some 88 large and 193 small fast patrol boats and craft, employed in port police duties. Most can carry 1 or 2/7.62-mm mg and would come under naval control in time of hostilities. Nearly all bear alphanumeric pendants in the "CP" series. Classes in use include:

CP 301, 302, 306, 308-311: 29 tons, Maierform design, 22 or 26 mo.a., 14 or 28 kt/1,000 n.m.

CP 303, 304: 18 tons, U.S. Coast Guard lifeboats, 13 mo.a. 12 kt/350 n.m. CP 239 through CP 245: 23.5 tons

CP 246: 21.5 tons

CP 231 through CP 238: 14 tons, 13 mo.a., 24 kt/300 n.m.

CP 226 through CP 230: 18 to 20 tons

CP 601: 3 tons

CP 501, 502: 3.5 tons

CP 2046 through CP 2065: 12.4 tons, U.K. Keith Nelson

CP 1001 through CP 1006: 5.2 tons

CP 2010 through CP 2017: 10 tons, U.K. Keith Nelson, 23 kt/400 n.m.

CP 2001 through CP 2005: 9 tons, U.K. Keith Nelson, 21 kt/400 n.m.

CP 207, 222: 8 tons

CP 202, 204, 205: 8 tons

CP 2024: 15 tons, used in search-and-rescue (SAR)

CP 2032: 12 tons, used in SAR

PORT CAPTAIN CORPS (continued)

CP 2025 through 2031, 2033 through 2041: 11 tons, for SAR CP 2018 through 2023: 10 tons, for SAR, U.K. Keith Nelson CP 2006 through 2009: 11 tons, for SAR

Also in use are the tug Audax (78 tons), and large patrol boats $Michelle\ Fiorillo$ (84 tons), $Bruno\ Gregoretti$ (65 tons), and CP 313, $Dante\ Novaro$ (57 tons; 25 kts/1,000 n.m.), 56 semi-rigid, inflatable boats (5–6 mo.a., 18–28 kt) and a number of small craft.



CP 244 (CP 239-CP 245 series)

C. Martinelli, 10-82



CP 238-14-ton class

L. & L. Van Ginderen, 1-81



Dante Novaro (CP 313) -25 kts, 2,400 hp





CP 303 - U.S. Coast Guard lifeboat

L. & L. Van Ginderen, 1982



CP 1004 (CP 1001-1006 series)

C. Martinelli, 7-84

ITALY (continued) PORT CAPTAIN CORPS (continued)



CP 2011 (CP 2010-2017 series, built in U.K. by Keith Nelson) C. Martinelli, 1982



CP 2021 (CP 2018-2023 series, another Keith Nelson design) L. & L. Van Ginderen, 8-84

CUSTOMS SERVICE (Guardia di Finanza)

The Ministry of Finance operates 157 patrol boats and 340 smaller craft under 15 administrative areas and organized into 48 squadrons. Most of the large units have 7.62or 12.7-mm mg or 20-mm AA armament. Nearly all the larger units have names, but a complete listing is not available. The Guardia di Finanza also operates 3 Agusta A 109 and several Breda Nardi NH 500 helicopters.

PATROL BOATS AND CRAFT

♦ 2 (+3 or 4) CNL 39 class Bldr: C. N. Liguri, Riva Trigoso (In serv. 1985)

D: 210 tons (fl) S: 28 kts (25 sust.) Dim: 40.90 × 7.60 × 2.46 A: 2/30-mm AA (II \times 1) -2/7.62-mm mg (I \times 2) M: 2 CRM 18D/SS-1500 diesels; 2 props; 3,000 hp Fuel: 45 tons

Range: 1,000/25; 1,300/20; 3,000/15 Man: 22 tot.

Remarks: Two ordered 1-84; three or four more planned. Also programmed are 85 23-m "Corrubia"-class patrol boats to replace most of the units built prior to 1975; these craft will displace 55 tons, have a speed of 35 kts, and will be armed with a 30-mm

Bldr: Crestitalia (In serv. 1983-85) 85 Seneca class

D: 8 tons S: 32 kts Dim: 11.10 × . . . × . . . M: 2 Fiat AIFO diesels; 2 props or Castoldi waterjets; 520 hp

- ◆ 2 of 109 tons: G 90, G 91 24 kts, 1/20-mm AA (In serv. 1958-59)
- ♦ 2 British "Dark" class Bldr: Saunders-Roe, Beaumaris, U.K. (In serv. 1956-58)

G 80 LA SPINA G 81 N.

Breda-Mauser AA gun.

D: 50 tons (70 fl) **S:** 20 kts **Dim:** 21.8 (20.4 wl) \times 6.0 \times 1.8 **A:** 1/20-mm AA **Fuel:** 18 tons

M: 2 CRM 18V-12D/55 YE diesels; 2 props; 2,700 hp

Remarks: Survivors of a group of four. Re-engined during the early 1970s. Wooden planking over aluminum alloy frames in hull.

♦ 56 GC 20 class

Bldr: Baglietto, Varezze (In serv. 1970-78)

G 10 through G 66



Pizzighella (G 55)

J. Jedrlinic, 1981

D: 40 tons (48.7 fl) S: 34 kts Dim: 20.4 × 5.2 × 1.7 max.

A: 1/20-mm AA — 2/7.62-mm mg Fuel: 6 tons Electron Equipt: Radar: 1/SMA 3RM-20 Range: 450/20

M: 2 CRM 18 DS diesels; 2 props; 2,700 hp Man: 1 officer, 9 men

Remarks: Steel construction. Names known: Gori, Pizzighella (G 55), Russo (G 20). Ten sisters built for Algeria.

- ◆ 2 of 54 tons: G 70, G 71 34 kts, 1/20-mm AA (In serv. 1966-67)
- ◆ GL 432, 433: 22.9 tons
- GL 103 through 106: 7.1 tons
- ◆ GL 309 through 331: 16.4 tons
- ◆ GL 201 through 205: 14.4 tons

Also in use are 58 craft numbered in the "V" series and ranging from 1.5 to 10.5 tons, the 28-ton patrol boat Alberti, the Customs Service training ship Paolini (G 95) of 348 tons, and the training craft Ciorlieri.

IVORY COAST

Republic of the Ivory Coast

Personnel (1984): 545 total (45 officers, 500 enlisted)

Merchant Marine (1984): 64 ships-143,358 grt (3 tankers-4,725 grt)

GUIDED-MISSILE PATROL BOATS

• 2 French Patra class

Bldr: Auroux, Arcachon

Laid down L'ARDENT

L'INTREPIDE

15-4-77

21-7-78

21-7-78

6-10-78 6-10-78

In serv.



L'Ardent

Auroux, 1978

IVORY COAST (continued) GUIDED-MISSILE PATROL BOATS (continued)

D: 125 tons (148 fl) S: 26.3 kts Dim: 40.70 (38.50 pp) × 5.90 × 1.55 A: 2/MM 40 Exocet - 1/40-mm AA - 1/20-mm AA - 2/7.62-mm mg Electron Equipt: Radar: 1/Decca 1226

M: 2 AGO 195 V12CZ SHR diesels; 2 CP props; 5,000 hp (4,400 sust.)

Electric: 120 kw

REMARKS: Ordered 1-77 and 4-77, respectively. Exocet added 1981.

Bldr: S.F.C.N., Villeneuve-la-Garenne • 2 PR-48 class

Laid down 1968 2-67 23-5-67 VIGILANT 25-9-76 LE VALEUREUX 28-10-75 8-3-76

D: 250 tons (fl) S: 23 kts Dim: 47.5 (45.5 pp) × 7.0 × 2.25

A: 4/MM 40 Exocet - 2/40-mm AA (I × 2)

M: 2 MGO diesels with Masson reduction gear; 2 props; 4,200 hp

Range: 2,000/16 Man: 4 officers, 30 men

Remarks: Vigilant refitted at Brest, France, 1981. Exocet added 1981.

AMPHIBIOUS WARFARE SHIPS

♦ 1 French BATRAL-E-class medium landing ship Bldr: Dubigeon, Normandy

ÉLÉPHANT (In serv. 2-2-77)

D: 750 tons (1,330 fl) S: 16 kts Dim: 80.0 (68.0 pp) \times 13.0 \times 3.0 (max.) A: 2/40-mm AA (I \times 2) M: 2 SACM diesels; 2 CP props; 1,800 hp

Range: 4,500/13 Man: 4 officers, 35 men

Remarks: Ordered 2-8-74. Similar to the French Navy's Champlain. Helicopter platform aft. Refitted at Brest, 1981.

 ◆ 10 Type 412 fast assault boats Bldr: Rotork, U.K. (In serv. 1979-80)

D: 5.2 tons (8.9 fl) S: 21 kts Dim: 12.65 × 3.20 × . . . M: 2 Volvo AQD 40A outdrive diesels; 2 props; 240 hp

• 1 Barracuda-class launch Bldr: Halter, New Orleans, U.S.A. (In serv. 1976)

D: 6 tons (8.35 fl) S: 36 kts Dim: 11.0 × 3.8 × 0.6

M: 2 G.M. 6V-53PI diesels; 2 water jets; 540 hp Capacity: 20 men

* 2 LCVP Bldr: Abidjan, 1970

D: 7 tons (9 fl) **S:** 9 kts **Dim:** $10.9 \times 3.2 \times 1.0$

M: 1 Mercedes-Benz diesel

SERVICE CRAFT

♦ 1 Arcor-30 launch Bldr: Arcor, La Teste, France (In serv. 1985)

D: 5 tons S: 20 kts Dim: 9.25 (8.30 pp) × 3.50 × 0.82 M: 2 Renault RC-160-D3 diesels; 2 props; 320 hp Man: 2 tot.

• 4 Arcor launches Bldr: Arcor, La Teste, France (In serv. 1982)

Dim: 7.92 o.a. M: 2 Renault diesels

 Arcor-31 launches Bldr: Arcor, La Teste, France (In serv. 1982)

Dim: 9.45 o.a. M: 2 Renault diesels

JAMAICA

DEFENCE FORCE COAST GUARD

Personnel (1984): 18 officers, 150 men (plus reserves: 16 officers, 30 men)

Merchant Marine (1984): 13 ships - 9,419 grt

PATROL BOATS

Note: The ordering of one 42.67-m and two 12.80-m patrol boats from Swiftships, Inc., Morgan City, La., in the U.S.A. is proposed for 1986.

 1 Fort Charles class Bldr: Teledyne Sewart, Berwick, La., (In serv. 1974)

P 7 FORT CHARLES

D: 103 tons (fl) S: 32 kts Dim: 31.5 × 5.7 × 2.1

A: 1/20-mm AA -2/12.7-mm mg (I \times 2)

M: 2 MTU MB 16V538 TB90 diesels; 2 props; 7,000 hp

Range: 1,200/18 Man: 3 officers, 14 men

Remarks: Can carry 24 soldiers and serve as an 18-bed floating dispensary. Refitted 1979-81 at Jacksonville, Florida.



Fort Charles (P 7)

L. & L. Van Ginderen, 1984

 3 85-foot Commercial Cruiser design U.S.A., 1966-67

Bldr: Sewart Seacraft, Berwick, La.,

P 4 DISCOVERY BAY P 5 HOLLAND BAY P 6 MANATEE BAY



Manatee Bay (P 6)

L. & L. Van Ginderen, 3-79

D: 60 tons S: 30 kts Dim: 25.9 × 5.68 × 1.83

A: 3/12.7-mm mg (I × 3) M: 3 MTU 8V331 TC81 diesels; 3 props; 3,000 hp Fuel: 13 tons Range: 800/20 Man: 2 officers, 9 men

Remarks: Re-engined twice, most recently from 1981 to 1983, by Swiftships, Inc., more than quadrupling the original horsepower.

JAPAN

Personnel (1984): 45,200 total, plus approx. 4,300 civilian employees

MERCHANT MARINE (1985): 10,425 ships - 40,358,479 grt)

(tankers: 1,771 ships - 17,520,917 grt)

The Maritime Self-Defense Force (MSDF), or Kaiso Jeitai, was created in 1954. In Article 9 of its constitution, Japan waived the right of belligerence and declared peaceful intentions. Consequently, the armed forces are designed to carry out purely defensive tasks. The duties of the MSDF involve essentially the protection of coastal traffic and of Japan's sea lines of communication, both of which are vital to the economic survival of one of the world's most industrialized nations. For some years now, however, the MSDF has tended to look more and more like an oceangoing navy, as is evidenced by the construction of more important ships.

In addition to the MSDF, Japan has a large and recently modernized Maritime Safety Agency (Kaijo Hoancho), which, in function, is roughly comparable to the U.S. Coast Guard and which, in time of war, would come under the control of the Navy. Its ships are listed at the end of this section.

Construction Programs:

1980 Budget:

2 DDG (127 Isoyuki, 128 Haruyuki), 1 frigate (228 Yubetsu), 1 SS (577 Nadashio), 2 MHC (656 Yakushima, 657 Narushima), and 3 service craft

1981 Budget:

1 DDG (171 Hatakaze), 2 DDG (129 Yamayuki, 130 Matsuyuki), 1 SS (578 Hamashio), 2 MHC (658 Chichijima, 659 Toroshima), 1 ASR (403 Chiyoda), and 2 service craft 1982 Budget:

., 132 . . ., 133 . . .), 1 SS (579 Akishio), 2 MHC (660 Hahajima, 3 DDG (131 661 Takashima), and 3 service craft

1983 Budget:

1 4,500 ton DDG (172 . . .), 1 3,400-ton DDG (134 . . .), 1 SS (580 . . .), 2 MHC (662 . . . , 663 . . .), 1 8,300-ton AOE (422 . . .), 1 2,000-ton survey ship (5104 . . .), and 4 service craft

CONSTRUCTION PROGRAMS: (continued)

1984 Budget:

3 3,400-ton DDG (135 . . . , 136 . . . , 137 . . .), 1 SS (581 . . .), 2 MHC (664 . . . , 665 . . .), 1 8,300-ton AOE (423 . . .)

1985 Budget:

3 3,400-ton DDG (138 . . . , 139 . . . , 140 . . .), 1 SS (582 . . .), 2 MHC (666 . . . , 667 . . .), and 1 service craft 1986 Budget (Request):

1 4,500-ton DDG (173 . . .), 2 3,400-ton DDG (. . . , . . .), 1 SS (583 . . .), 2 MHC (668 . . . , 669 . . .), 1 250-ton missile boat, 1 2,000-ton training ship, . . . service craft

During the period 1983-87, it had been planned to request funds to build 2 6,500-ton AEGIS DDG, 1 4,500-ton DDG, 8 3,400-ton DDG, 3 DE of 1,600 to 1,900 tons, 6 SS, 1 prototype 1,000-ton minesweeper, 12 440-ton MSG, 6 250-ton guided-missile boats, 2 submarine rescue ships (ASR), 2 8,300-ton replenishment ships, 3 3,500-ton LSTs, 3 350-ton utility landing craft, and a 2,000-ton training ship. However, financial and political constraints have deleted or deferred a number of programs, particularly the amphibious warfare units.

NAVAL AVIATION: Naval air is an integral part of the Navy and has about 8,000 men assigned. Its headquarters are in Atsugi, and it has twelve bases along the coasts of Japan. The Air Training Command has several centers at Shimofusa. Some 20 helicopters serve on board the destroyers and frigates. As of 31 Jan. 1985, the naval air arm consisted of 212 aircraft including:

78 P-2J patrol planes

75 HSS-2 Sea King ASW helicopters

17 P-3C patrol planes

7 KV-107-II minesweeping helicopters

14 PS-2 ASW seaplanes

81 miscellaneous aircraft, including 62 KM-2 trainers

In the 1981 Budget, 6 HSS-2B, 1 S-61A rescue helicopter, 1 KM-2, and 4 TC-90 were authorized. In 1982, 7 P-3C, 1 US-1, 2 King Air TC-90, 8 SH-3B/HSS-2B, 2 OH-6D, 4 S-61A, and 2 KM-2 were approved. The 1983 Budget approved 10 P-3C, 1 US-1A, 3 King Air TC-90, 10 HSS-2B (SH-3B) Sea King, 1 S-61A, 2 OH-6D, and 2 SH-60B. The 1984 Budget approved 8 P-3C, 1 US-1A, 1 TC-90, 12 HSS-2B, 2 S-61, 3 OH-6D, 1 Learjet-U-36A, and 1 SH-60B. For 1985 10 P-3C, 1 U-36A, 10 HSS-2B, and 1 S-61A were approved. The SH-60B (S-70B) ASW helicopters are planned as prototypes and research aircraft for a Mitsubishi-built series production program to begin in 1991, substituting Japanese for U.S. electronics

Originally set at 45, the force-level goal for P-3C long-range patrol aircraft was announced in 5-85 as 103, as the P-2J is slowly phased out; 31 P-3C will be in service by



P-3C Orion

Kawasaki, 1982



PS-1 of the Iwakuni-based Fleet Air Wing

1982



P-2J Neptune towing target sleeve

JMSDF,1984



HSS-2B Sea King

JMSDF, 1984

3-87 (4 squadrons); all will be able to launch U.S. Harpoon missiles. In FY 86, 12 P-3C are to be requested. The last of 13 S-2F1 ASW aircraft was stricken 31-3-84. Three P-2Js have been converted to EP-2J ELINT collectors and 4 to UP-2J trainers; three Learjet U-36A aircraft are to replace the UP-2Js as radar and sonobuoy trainers between 10-85 and 3-87. The Shin-Meiwa PS-1 ASW seaplanes are being modernized with Litton APS-504 radars, cargo doors, cameras, and drop ports. A plan to acquire U.S. MH-53E minesweeping helicopters to replace the dwindling numbers of KV-107-IIs has been deferred for several years, but in 5-85 it was announced that a new goal of 12 had been set, and 4 are to be ordered during 1986.

Warships In Service And Under Construction As Of 1 January 1986

| | L | Tons (Surfaced) | Main armament |
|--|--------------------------|-------------------------|--|
| ◆ 15 (+4) submarines | | | |
| 6 (+4) Yushio 7 Uzushio 1 Asashio | 1979- 1970-75 1968 | 2,200 1,850 1,650 | 6/533-mm TT 6/533-mm TT 8/533-mm TT |
| ♦ 31 (+15) destroyers | | (Std.) | |
| 0 (+7) 3,400-ton DDG | 1986- | 3,400 | Harpoon, Sea Sparrow, ASROC, 1/76-mm DP, ASW TT, 1 helo |
| 0 (+3) 4,500-ton DDG | 1984- | 4,500 | Harpoon, 1/Standard launcher, 1/127-mm, ASROC, ASW TT |
| 7 (+5) Hatsuyuki | 1980- | 2,900 | Harpoon missiles, Sea Sparrow, ASROC, 1/76-mm DP, ASW TT, 1/helo |
| 2 Shirane | 1978-79 | 5,200 | 2/127-mm DP, 3 helicopters |
| 3 Tachikaze | 1974-81 | 3,850 | 1/Standard launcher, 2/127-mm, ASROC, 6 TT |
| 2 Haruna | 1971-73 | 4,700 | 2/127-mm DP, 6/324-mm TT, ASROC, 3 helicopters |
| 6 Yamagumo | 1965-77 | 2,100 | 4/76-mm DP, 4/375-mm TT |
| 3 Minegumo | 1967-69 | 2,066 | 4/76-mm DP, 1 rocket launcher, 6/324-mm TT |
| 4 Takatsuki | 1966-69 | 3,200 | 2/127-mm DP, ASROC |
| 1 Amatsukaze | 1963 | 3,050 | 1/Standard launcher, 4/76-mm DP, ASROC |
| 1 AKIZUKI | 1959 | 2,300 | 3/127-mm AA, 4/76-mm DP |
| 2 Ayanami | 1957-60 | 1,700 | 6/76-mm DP, 4/533-mm TT |
| • 18 frigates | | | |
| 2 Yubari | 1982 | 1,400 | Harpoon missiles, 1/76-mm DP |
| 1 Ishikari | 1980- | 1,200 | Harpoon missiles, 1/76-mm DP |
| 11 Chikugo | 1970-76 | 1,470 | 2/76-mm DP, 2/40-mm AA, ASROC |
| 4 Isuzu | 1961-63 | 1,490 | 4/76-mm DP, ASW weapons |

- 2 submarine chasers
- 5 torpedo boats
- ◆ 42 (+4) mine warfare ships and craft
- · 8 amphibious warfare ships

WEAPONS AND SYSTEMS

Until the 1970s, most weapons and detection gear were of American design, built under license in Japan. However, the latest ships are being equipped with Japanese-designed, long-range, pulse-compression air-search radars and with the 76-mm OTO Melara gun. The latter is built under license. U.S. Vulcan/Phalanx 20-mm CIWS (Close-In

Weapon System) and Harpoon anti-ship missiles are being procured in quantity. In Japan, the U.S. SPS-10 radar is referred to as OPS-1, SPS-6 as OPS-15, and SPS-12 as OPS-16. Similarly, the U.S. SQS-23 sonar, when built in Japan, is referred to as the OQS-3, while the OQS-1 and -2 were license-built SQS-4/29 series equipments. The OQS-4 is an indigenous, low-frequency design, as is OQS-101.

Weapons are also produced in Japan. Mitsubishi has a license to build the U.S. Mk 46 Mod. 5 "Neartips" ASW torpedo, while the indigenously designed GRX-2 high-speed homing torpedo for submarine service and the GRX-3 short-range ASW torpedo for aircraft are in development. The U.S. Standard SM-1 MR and AIM-7E surface-to-air

WEAPONS AND SYSTEMS (continued)

missiles are in use, while submarines, surface ships, and aircraft are being equipped with the U.S. Harpoon anti-ship missile.

For shore defense, 56 6-tubed trucks are to be delivered beginning in 1989 to launch the Mitsubishi SSM-1 missile, powered by a turbojet:

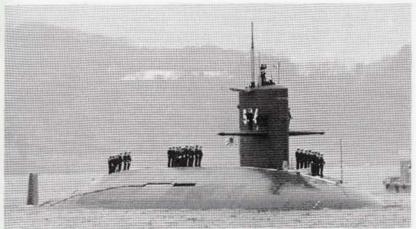
Length: 5.0 m Diameter: 35 cm Span: 1.2 m

Weight: 660 kg Warhead: 224 kg Range: 150 km

SUBMARINES (SS)

♦ 6 (+4) Yushio class

| | Bldr | Laid down | L | In serv. |
|--------------|------------------|-----------|---------|----------|
| 573 Yushio | Mitsubishi, Kobe | 3-12-76 | 29-3-79 | 26-2-80 |
| 574 Моснівню | Kawasaki, Kobe | 28-4-78 | 12-3-80 | 5-3-81 |
| 575 Setoshio | Kawasaki, Kobe | 28-4-79 | 12-2-81 | 17-3-82 |
| 576 OKISHIO | Kawasaki, Kobe | 17-4-80 | 5-3-82 | 1-3-83 |
| 577 Nadashio | Mitsubishi, Kobe | 16-4-81 | 27-1-83 | 6-3-84 |
| 578 Hamashio | Kawasaki, Kobe | 8-4-82 | 1-2-84 | 5-3-85 |
| 579 AKISHIO | Mitsubishi, Kobe | 15-4-83 | 21-1-85 | 3-86 |
| 580 Takeshio | Kawasaki, Kobe | 3-4-84 | 2-86 | 3-87 |
| 581 N | Mitsubishi, Kobe | 11-4-85 | 1-87 | 3-88 |
| 582 N | Kawasaki, Kobe | 4-86 | -88 | 3-89 |
| 583 N | | * * * | | |



Okishio (SS 576)

L. & L. Van Ginderen, 3-83



Nadashio (SS 577)

L. & L. Van Ginderen, 8-84

D: 2,200 tons (surf.) S: 12/20 kts Dim: 76.20 × 9.9 × 7.5 A: 6/533-mm TT M: 2 Kawasaki/M.A.N. V8/V24-30 AMTL, 1,700-hp diesel generator sets (2,840 kw tot.), 1 Fuji electric motor; 1 prop; 7,220 hp

Electron Equipt: Radar: ZPS-6-Sonar: SQS-36J active, ZQQ-4 passive suite Man: 10 officers, 70 men

Remarks: Deeper-diving than the Uzushio class and have more modern electronic equipment. 577 and later are to be equipped with U.S. Sub-Harpoon missiles. At least 14 planned, 6 during 1983-88. Double-hull design. Plan one per year through 1988.

♦ 7 Uzushio class

| | Bldr | Laid down | L | In serv. |
|--------------|------------------|-----------|----------|----------|
| 566 Uzushio | Kawasaki, Kobe | 25-9-68 | 11-3-70 | 21-1-71 |
| 567 Makishio | Mitsubishi, Kobe | 21-6-69 | 27-2-71 | 2-2-72 |
| 568 Іѕоѕню | Kawasaki, Kobe | 9-7-70 | 18-3-72 | 25-11-72 |
| 569 Narushio | Mitsubishi, Kobe | 8-5-71 | 22-11-72 | 28-9-73 |
| 570 Kuroshio | Kawasaki, Kobe | 5-7-72 | 22-2-74 | 27-11-74 |
| 571 TAKASHIO | Kawasaki, Kobe | 6-7-73 | 30-6-75 | 30-1-76 |
| 572 YAESHIO | Kawasaki Kobe | 14-4-75 | 19-5-77 | 7-3-78 |

D: 1,850/3,600 tons S: 12/20 kts Dim: 72.0 × 9.9 × 7.5 A: 6/533-mm TT Electron Equipt: Radar: 1/ZPS-4-Sonar: ZQQ-4 passive suite, SQS-36(J) active

M: Diesel-electric propulsion; 2 Kawasaki-M.A.N. V8/V24-30 AMTL, 1,700 hp diesels; 1 prop; 7,200 hp

Man: 10 officers, 70 men



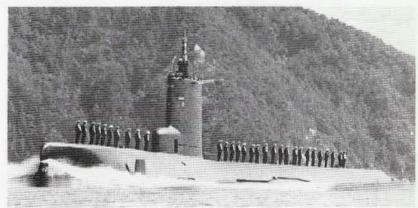
Makishio (SS 567)

L. & L. Van Ginderen, 7-84

Remarks: Tear-drop hull. Double-hull construction, bow sonar array, torpedo tubes amidships, as in modern U.S. Navy submarines. Maximum depth: 200 m.

1 Asashio class

| | Bldr | Laid down | L | In serv. |
|-------------|------------------|-----------|----------|----------|
| 565 Arashio | Mitsubishi, Kobe | 5-7-67 | 27-10-68 | 25-7-69 |



Arashio (SS 565)

Ships of the World, 3-84

D: 1,650 tons S: 14/18 kts Dim: 88.0 × 8.2 × 4.9

A: 8/533-mm TT (6 fwd, 2 aft: 20 torpedoes) Electron Equipt: Radar: 1/ZPS-3 — Sonar: SQS-4 active, JQS-3A, JQQ-2A

passive - EW: BLR-1 intercept

M: 2 Kawasaki diesels; 2,900 hp each; 2 electric motors, 3,150 hp each; 2 props

Man: 80 tot.

Remarks: Oshio, built during the 1961 program and stricken 3-82, was the prototype for the other four and was considered a separate class. She had a less elaborate sonar array and a more pointed bow. Asashio (562) stricken early 1983, Harushio (563) on 30-3-84 and Michishio (564) on 27-3-85.

HELICOPTER-CARRYING DESTROYERS (DDH)

• 2 Shirane class

| | Bldr | Laid down | L | In serv. |
|-------------|---------------------|-----------|---------|----------|
| 143 SHIRANE | Ishikawajima, Tokyo | 25-2-77 | 18-9-78 | 17-3-80 |
| 144 Kurama | Ishikawajima, Tokyo | 17-2-78 | 20-9-79 | 27-3-81 |
| 144 KURAMA | Ishikawajima, Tokyo | 11-2-10 | 20-9-19 | 21- |

D: 5,200 tons (6,800 fl) **S:** 32 kts **Dim:** $158.8 \times 17.5 \times 5.3$ (hull) **A:** 2/127-mm Mk 42 DP (I \times 2) — 1/Mk 29 launcher (VIII \times 24 Sea Sparrow) — 144 only; 2/20-mm Mk 15 CIWS AA (I × 2) - 1/ASROC ASW RL (VIII × 1, 16 missiles) - 6/324-mm Type 68 ASW TT (III × 2) - 3/HSS-2B ASW helicopters

Electron Equipt: Radar: OPS-22 nav., 1/OPS-12, 1/OPS-28, 1/WM-25 (H.S.A.), 2/GFCS-1A, 1/CCA

TACAN: URN-25

EW: NOLQ-1 passive/active, OLR-9B passive

Sonar: OQS-101 (hull), SQS-35 VDS, SQR-18A towed array

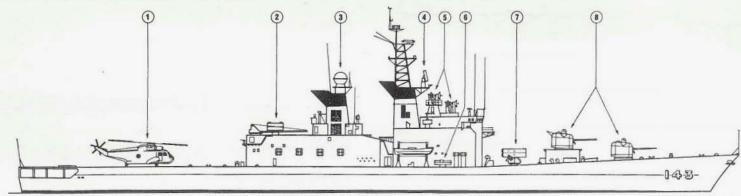
M: 2 sets GT; 2 props; 70,000 hp Boilers: 2; 60 kg/cm2, 480°C Man: 370 tot.



Shirane (DDH 143) - with 2 SATCOMM radomes, no CIWS

Ships of the World, 1984

HELICOPTER-CARRYING DESTROYERS (DDH) (continued)



Shirane (DDH 143) 1. HSS-2B Sea King helicopter 2. Sea Sparrow Mk 29 launcher 3. WM 25 track-while-scan radar 4. OPS-12 3-dimensional air-search radar 5. GFCS-1A gunfire-control radar directors 6. Triple Mk 32 ASW torpedo tubes 7. ASROC Mk 112 ASW rocket launcher 8. Mk 42 Mod. 10 127-mm dual-purpose guns



Shirane (DDH 143)

Ships of the World, 7-84



Kurama (DDH 144) - with 2 Mk 15 CIWS (Vulcan/Phalanx)

L. & L. Van Ginderen, 10-84

Remarks: Modified Haruna class. Both received U.S. SQR-18A TACTASS passive towed hydrophone arrays during 1981. Have "Masker" bubble-generating system to reduce radiated noise. WM-25 controls the Sparrow missiles. Will eventually receive Harpoon missiles. Have two stacks, slightly staggered, compared to one on the Haruna class. DDH 143 still lacked Vulcan/Phalanx in late 1984. Both have TDPS-Target Data Processing System, with a U.S. UYK-20 computer and OYQ-5 display. Have LINK 11 and LINK 14 data transmission systems. A landing control radar is mounted to port of the after stack.

2 Haruna class

| | Bldr | Laid down | L | In serv. |
|------------|----------------------|-----------|---------|----------|
| 141 HARUNA | Mitsubishi, Nagasaki | 19-3-70 | 1-2-72 | 22-3-73 |
| 142 Hiei | Ishikawajima-Harima | 8-3-72 | 13-8-73 | 27-12-74 |



Haruna (DDH 141)

L. & L. Van Ginderen, 7-80



Hiei (DDH 142) - with 2 SATCOMM antennas

Ships of the World, 7-84

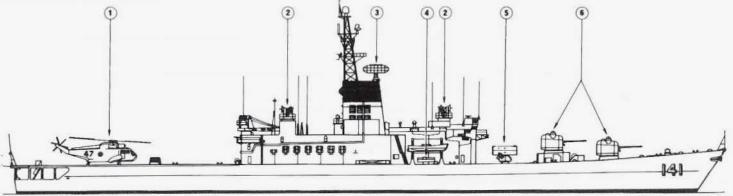
D: 4,700 tons (6,300 fl) S: 32 kts Dim: 153.0 × 17.5 × 5.1

A: 2/127-mm Mk 42 DP (I×2)—6/324-mm Type 68 ASW TT (III×2)—
1/ASROC ASW system—3/HSS-2 ASW helicopters
Electron Equipt: Radar: 1/OPS-11, 1/OPS-17, 2/GFCS-1

Sonar: OQS-3-EW: OLR-9 intercept TACAN: ORN-6

M: 2 sets GT; 2 props; 70,000 hp Boilers: 2; 60 kg/cm², 480°C Man: 36 officers, 304 men

Remarks: Plan to upgrade by installing Sea Sparrow, Vulcan/Phalanx, SQS-35 VDS (for which provision was made in the design), and Harpoon; funding for DDH 141 approved FY 83, for completion 1987; funding for DDH 142 in 1984 Budget. DDH 142 received improved sonar, 1981. Have single "mack," offset to port. Had very little EW gear as built.



Haruna (DDH 141) 1. HSS-2 Sea King helicopter 2. GFCS-1 gunfire-control system 3. OPS-11 air-search radar 4. Mk 68 ASW TT 5. ASROC ASW rocket launcher 6. 127-mm, 54-caliber, dual-purpose guns, Mk 42 Mod. 10

GUIDED-MISSILE DESTROYERS

Note: A new 6,000-ton (standard displacement) guided-missile destroyer is being designed. To carry the U.S. SPY-1D AEGIS radar and Standard SM-2 MR missiles, the first of four is planned to be requested in the 1987 Budget for delivery in 1992. The others will be ordered at 2-year intervals.

♦ 0 (+7+3) new construction, 1983 Program (DDK)

| | Bldr | Laid down | L | In serv. |
|-------|---------------------|-----------|--------|----------|
| 134 N | Ishikawajima-Harima | 13-2-85 | 7-86 | 3-88 |
| 135 N | Sumitomo, Uraga | 1-86 | 9-87 | 1-89 |
| 136 N | Mitsui, Tamano | 2-86 | 9-87 | 2-89 |
| 137 N | Ishikawajima-Harima | 3-86 | 8-87 | 3-89 |
| 138 N | * *** | 4 4 4 | | |
| 139 N | * *** | 1.4.4 | 1505 5 | |
| 140 N | A 404 | 3.303 | * * * | 4.414 |

D: 3,400 tons (4,200 fl) S: 30 kts Dim: 136.5 × 14.6 × 4.45 (mean)

A: 8/Harpoon SSM (IV × 2)-1/Mk 29 missile launcher (VIII × 1; 18 Sea Sparrow missiles) — 1/76-mm OTO-Melara Compact — 2/20-mm Mk 15 CIWS AA (I \times 2) — 1/Mk 112 ASROC ASW RL (VIII \times 1; . . . rockets) — 6/324-mm Type 68 ASW TT (III \times 2 H.O.S. 301 for Mk 46 Mod 5 torpedoes) - 1/HSS-2B helicopter

Electron Equipt: Radar: 1/OPS-28, 1/CPS-14C, 1/FCS-2-21A, 1/FCS-2-12E

Sonar: OQS-4A, SQR-18B TASS

EW: OLR-9C passive, OLR-6C active/passive, OLT-3 D/F, 2 Mk 36 SRBOC chaff RL (VI × 2)

TACAN: URN-25

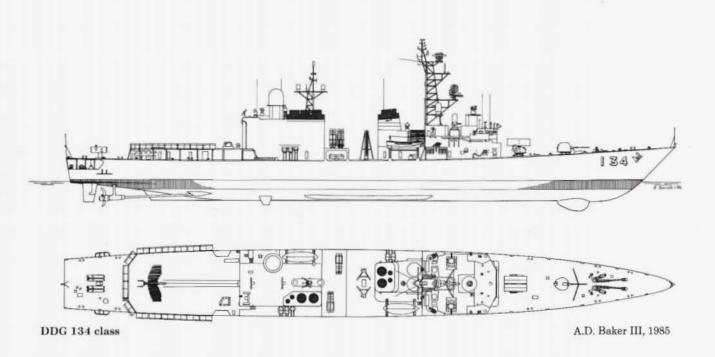
M: COGAG: 4 Kawasaki-Rolls-Royce Spey SM-1A gas turbines; 2 CP props; 59,000 hp (68,400 max.)

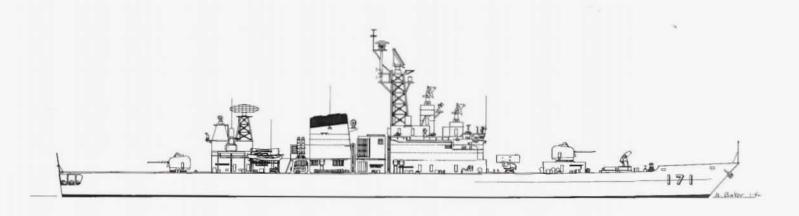
Range: . . . Electric: . . . Fuel: . . . Man: 230 tot.

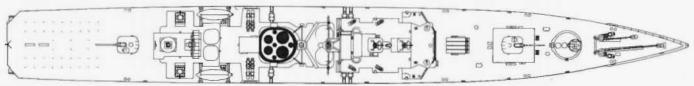
Remarks: An improved Hatsuyuki. DD 134 ordered 29-3-84. Will have the OYQ-6 Combat Direction System, employing the U.S.-built UYK-20A computer and the Japanese OJ-194B Digital Display Indicator. The Target Designation System is designated OYQ-5. Provision will be made for the SQS-35 variable-depth sonar. U.S.built SLQ-25 NIXIE torpedo decoys and the Prairie/Masker bubble countermeasures system will be fitted. Will have fin stabilizers, and a Beartrap/RAST-type helicopter landing and deck-handling system. DDG 135-137 in 1984 Budget, 138-140 in 1985 Budget, when one more than requested was authorized; a total of 10 is projected.

♦ 0 (+2+1) Hatakaze class (DDG)

| | Bldr | Laid down | L | In serv. |
|--------------|----------------------|-----------|---------|----------|
| 171 HATAKAZE | Mitsubishi, Nagasaki | 20-5-83 | 9-11-84 | 31-3-86 |
| 172 N | Mitsubishi, Nagasaki | 30-1-85 | 10-86 | 3-88 |







Hatakaze (DDG 171)

A.D. Baker III, 1985

D: 4,450 tons (5,400 fl) S: 32 kts Dim: 150.0 × 16.4 × 4.80 (mean)

A: 1/Mk 13 Mod. 4 missile launcher (I × 1, 40 Standard SM-1 MR missiles) - 8/ Harpoon SSM (IV \times 2) -2/127-mm Mk 42 DP (I \times 2) -2/20-mm Vulcan/ Phalanx Mk 15 Mod. 2 AA (I × 2) -1/ASROC Mk 116 ASW RL (VIII × 1) - 6/324-mm Type 68 ASW TT (III × 2) - 1/HSS-2B helicopter (no hangar)

Electron Equipt: Radar: 1/OPS-28, 1/OPS-11, 1/OPS-12, 2/SPG-51C, 1/GFCS-1, 1/GFCS-1A

Sonar: OQS-4 - TACAN: URN-25

EW: NOLR-6C active/passive, OLR-9B passive, Mk 36 SRBOC chaff RL (VI × 4)

M: COGAG: 2 Rolls-Royce Spey SM-1A and 2 Olympus TM-3D gas turbines; 2 CP props; 72,000 hp

Range: . . . Man: . . .

Remarks: Mk 13 missile launcher and one of the two 127-mm guns will be forward. No hangar for helicopter. U.S. Mk 74 Mod. 13 missile fire-control system (2/SPG-51C radar directors) for the Standard missile system. DDG 171 in 1981 Budget, 172 in 1983; 173 requested 1985 but denied. DDG 172 ordered 29-3-84.

♦ 7 (+5) Hatsuyuki class (DDK)

| | Bldr | Laid down | L | In serv. |
|---------------|----------------------------|-----------|----------|----------|
| 122 Hatsuyuki | Sumitomo, Uraga | 14-3-79 | 7-11-80 | 23-3-82 |
| 123 SHIRAYUKI | Hitachi, Maizuru | 3-12-79 | 4-8-81 | 8-2-83 |
| 124 MINEYUKI | Mitsubishi, Nagasaki | 7-5-81 | 17-10-82 | 26-1-84 |
| 125 SAWAYUKI | Ishikawajima-Harima, Tokyo | 22-4-81 | 21-6-82 | 15-2-84 |
| 126 Hamayuki | Mitsui, Tamano | 4-2-81 | 27-5-82 | 18-11-83 |
| 127 Іѕоуцкі | Ishikawajima-Harima, Tokyo | 20-4-82 | 19-9-83 | 23-1-85 |

| 128 Haruyuki | Sumitomo, Uraga | 11-3-82 | 6-9-83 | 14-3-8 |
|---------------|----------------------------|----------|----------|--------|
| 129 Yamayuki | Hitachi, Maizura | 25-2-83 | 10-7-84 | 3-86 |
| 130 Matsuyuki | Ishikawajima-Harima, Tokyo | 7-4-83 | 25-10-84 | 3-86 |
| 131 N | Mitsui, Tamano | 26-1-84 | 6-85 | 1-87 |
| 132 N | Sumitomo, Uraga | 21-12-83 | 8-85 | 2-87 |
| 133 N | Mitsubishi, Nagasaki | 8-5-84 | 10-85 | 3-87 |

D: DDK 122-120: 2,950 tons (3,700 fl) DDK 129-133: 3,050 tons (3,800 fl)

Dim: 131.7 (126.0 wl) × 13.7 × 4.1 (129 and later: 4.3)(hull)

A: 8/Harpoon SSM (IV × 2) -1/Mk 29 missile launcher (VIII × 1, 13 Sea Sparrow missiles) - 1/76-mm DP OTO Melara Compact - 2/20-mm Mk 15 CIWS AA (I × 2) - 1/ASROC ASW RL (VIII × 1, 16 missiles) - 6/324-mm Type 68 ASW TT (III × 2) - 1/HSS-2B ASW helicopter

Electron Equipt: Radar: 1/OPS-18, 1/OPS-14B, 1/GFCS-2-21 (76-mm),

1/GFCS-2-12 (Sea Sparrow) Sonar: OQS-4 — TACAN: URN-25

EW: NOLR-6C passive, OLT-3 D/F, 2 Mk 36 SRBOC chaff $RL(VI \times 2)$

M: COGOG: 2 Kawasaki-Rolls-Royce Olympus TM-3B gas turbines, 28,390 hp each; 2 Tyne RM-1C gas turbines, 5,340 hp each; 2 CP props; 45,000 hp (50,000 max.)

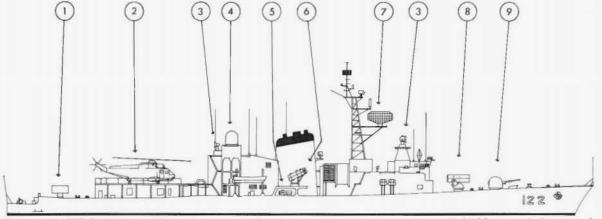
Man: 190-195 tot.

Remarks: Have fin stabilizers, DD 122 in 1977 budget, 123 in 1978, 124-126 in 1979, 129 and 130 in 1981, and 131-133 in 1982. The Olympus engines are rated at 22,500 hp for cruise, 25,000-hp limit, while the Tyne cruise engines are rated at 4,620-hp cruise/ 5,000-hp max. and provide speeds up to 19.5 kts. Helicopter deck has the Canadian



Hamayuki (DDK 126)

Ships of the World, 11-83



Hatsuyuki (DDG 122) 1. Mk 29 launcher for Sea Sparrow 2. HSS-2B helicopter 3. GFCS-1 or 1A fire-control radar 4. GFCS-2 antenna 5. Mk 68 ASW TT (III×2) 6. Harpoon ASM (IV×2) 7. OPS-14B radar antenna 8. ASROC ASW RL (VIII × 1) 9. 76-mm OTO Melara Compact dual-purpose gun



Sawayuki (DDK 125)

JMSDF, 2-84



Isoyuki (DDK 127)

Ships of the World, 6-84



Shirayuki (DDK 123) - no Mk 15 CIWS

JMSDF, 1984

Beartrap traversing/landing system. All are programmed to receive U.S. SQR-18 or 19 TACTASS towed passive linear arrays. Have TDPS—Tactical Data Processing System—with a U.S. UYK-20 computer. Have LINK 14 data relay receiver only. Stack incorporates passive infrared cooling features and a water-spray system. DDK 129 and later have steel vice aluminum superstructures. DDK 122 lacks Mk 15 CIWS and Mk 36 SRBOC chaff RL; DDK 123 lacks CIWS.

• 3 Tachikaze class (DDG)

| | Bldr | Laid down | L | In serv. |
|---------------|----------------------|-----------|----------|----------|
| 168 TACHIKAZE | Mitsubishi, Nagasaki | 19-6-73 | 12-12-74 | 26-3-76 |
| 169 Asakaze | Mitsubishi, Nagasaki | 27-5-76 | 15-10-77 | 27-3-79 |
| 170 SAWAKAZE | Mitsubishi, Nagasaki | 14-9-79 | 4-6-81 | 30-3-83 |

D: 3,850 tons (4,800 fl) S: 32 kts Dim: 143.0 × 14.3 × 4.6
A: 1/Mk 13 Mod. 4 missile launcher (40 Standard SM-1 MR SAM/Harpoon SSM) — 2/127-mm Mk 42 DP (I × 2) — 2/20-mm Mk 15 CIWS gatling AA (I × 2) — 1/ASROC Mk 116 ASW RL (VIII × 1) — 6/324-mm Type 68 ASW TT (III × 2)



Asakaze (DDG 169) - with two Mk 15 CIWS

Ships of the World, 4-85



Sawakaze (DDG 170)

Ships of the World, 7-84

Electron Equipt: Radar: OPS-17 (170: OPS-28), 1/OPS-11B, 1/SPS-52B, 2/SPG-51C, 1/GFCS-1A
Sonar: OQS-3 (170: OQS-4)

EW: OLT-3 system, 4/Mk 36 Mod. 2 Super RBOC chaff RL M: 2 sets GT; 2 props; 70,000 hp Boilers: 2; 60 kg/cm², 480°C Man: 277 tot.

Remarks: U.S. Vulcan/Phalanx gatling guns and Harpoon were added to 168 under 1981 Budget, as well as improvements to SAM system. Same improvement made to DDG 169 in 1984-85 and to DDG 170 under 1985 Budget. The SPS-52B acts as the principal air-search radar. The missile-control system is Mk 74 Mod. 13 and uses the two SPG-51C radars. The propulsion plant is identical to that of the *Haruna* class. All now can carry two SATCOMM antenna radomes atop bridge and have a LINK 14 data transmission system. The ASROC launcher has a reload magazine below the bridge.

• 1 Amatsukaze class (DDG)

 Bldr
 Laid down
 L
 In serv.

 163 Amatsukaze
 Mitsubishi, Nagasaki
 29-11-62
 5-10-63
 15-2-65

D: 3,050 tons (4,000 fl) S: 33 kts Dim: 131.0 × 13.4 × 4.2 (mean)

A: 1/Mk 13 launcher (40 Standard SM-1 MR SAM) — 4/76.2-mm 50-cal. DP Mk 33 (II \times 2) — 1/ASROC ASW RL (VIII \times 1) — 6/324-mm Type 68 ASW TT (III \times 2) — 2/Mk 15 trainable Hedgehog

Electron Equipt: Radar: 1/OPS-17, 1/SPS-29, 1/SPS-52, 2/SPG-51, 1/GFCS-2-21

Sonar: SQS-23-EW: OLT-1

M: 2 sets Ishikawajima-G.E. GT; 2 props; 60,000 hp Fuel: 900 tons

Boilers: 2 Ishikawajima-Foster-Wheeler; 38 kg/cm², 438°C Electric: 2,700 kw Range: 7,000/18 Man: 290 tot.

Remarks: Refitted in 1967 with ASW TT and SPS-52 radar. Crane at stern handles boats stowed in a below-decks hangar. One GFCS-2-21 radar director replaced the original two U.S. Mk 63 GFCS in 1982-83, but planned replacement of the guns by two



Amatsukaze (DDG 163)

L. & L. Van Ginderen, 10-84

76-mm OTO Melara mounts and EW updates were not carried out. There are no reloads for the ASROC.

♦ 4 Takatsuki class (DD)

| | Bldr | Laid down | L | In serv. |
|---------------|----------------------|-----------|---------|----------|
| 164 Takatsuki | Ishikawajima, Tokyo | 8-10-65 | 7-1-66 | 15-3-67 |
| 165 Kikizuki | Mitsubishi, Nagasaki | 15-3-66 | 25-3-67 | 27-3-68 |
| 166 Моснідикі | Ishikawajima, Tokyo | 25-11-66 | 15-3-69 | 25-3-69 |
| 167 Nagatsuki | Ishikawajima, Tokyo | 2-3-68 | 19-3-69 | 12-2-70 |



Takatsuki (DD 164) - as modernized

Ships of the World, 1985



Kikizuki (DD 165) - smooth hull sides

P. Voss, 8-83



Nagatsuki (DD 167) — hull knuckle, no VDS

Ships of the World, 11-84

D: 3,200 tons (4,500 fl) S: 32 kts Dim: 136.0 (131.0 pp) × 13.4 × 4.4 (mean)
A: 164−166: 8/Harpoon SSM (IV × 2) − 1/Mk 29 SAM launcher (VIII × 1, 16
Sea Sparrow missiles) − 1/127-mm Mk 42 DP − 1/20-mm Mk 15 CIWS −
1/ASROC Mk 116 ASW RL (VIII × 1, no reloads) −1/375-mm Bofors ASW
RL (IV × 1) −6/324-mm Mk 32 ASW TT (IV × 2); 167: 2/127-mm Mk 42
DP (I × 2) −1/ASROC Mk 116 ASW RL (VIII × 1) − 1/375-mm Bofors
ASW RL (IV × 1) −6/324-mm ASW TT (III × 2)

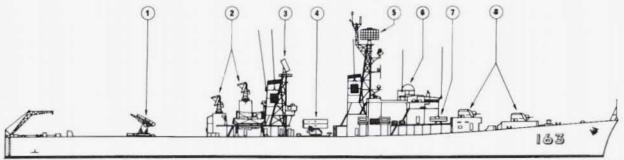
Electron Equipt: Radar: 1/OPS-11B-Y, 1/OPS-17, 1/GFCS-2-12B, 1/Mk 35 (167: 2/GFCS-1)

Sonar: SQS-23 (166, 167: OQS-3), SQS-35 (J) VDS EW: NOLR-6C (167: NOLR-1B), Mk 36 SRBOC (VI × 2, not in 167)

TACAN: 167 only: ORN-6

M: 2 sets Mitsubishi GT; 2 props; 60,000 hp

Boilers: 2 Mitsubishi-Combustion Eng.; 43 kg/cm², 454 °C Fuel: 900 tons Range: 7,000/20 Man: 270 tot.



Amatsukaze (DDG 163) 1. Mk 13 missile launcher 2. SPS-51 missile-control radars 3. SPS-52-3D radar 4. ASROC ASW rocket launcher 5. SPS-29 air-search radar 6. GFCS-2-21 gunfire-control director 7. Mk 32 ASW TT 8. 76.2-mm, 50-caliber, U.S. Mk 33, dual-purpose gunmounts

REMARKS: Originally carried three U.S. DASH drone ASW helicopters, removed in 1977 and hangar not used. DD 166 and 167 have a knuckle in the hull sides forward; the earlier two do not. DD 165 has fin stabilizers. DD 164 authorized under 1981-82 Budget to receive extensive modernization completing in 10-85, DD 166 refitting under 1983-84 Budget, to complete 10-86, DD 165 authorized 1985. The DASH hangar and after 127-mm gun are to be removed. Gained will be a Mk 29 launcher aft for Sea Sparrow, 8 Harpoon missiles (IV × 2), 1/Mk 15 CIWS (Vulcan/Phalanx) gatling AA gun (only in DD 164), upgrading of the OQS-3 sonar, provision for U.S. SQR-18A TACTASS towed passive hydrophone array, replacement of the after Mk 56 GFCS with GFCS-2, substitution of the NOLR-6C EW system for the present array, addition of LINK 14 digital data link equipment, installation of the U.S. Mk 36 Super RBOC chaff launching system, installation of a MARISAT SATCOMM radome atop the after "mack," and removal of the ORN-6 TACAN where fitted; DD 166 will also receive VDS.

6 Yamagumo class (DDK)

| | Bldr | Laid down | L | In serv. |
|--------------|---------------------|-----------|----------|----------|
| 113 Yamagumo | Mitsui, Tamano | 23-3-64 | 27-2-65 | 29-1-66 |
| 114 Makigumo | Uraga, Yokosuka | 10-6-64 | 26-7-65 | 19-3-66 |
| 115 ASAGUMO | Maizuru, Heavy Ind. | 24-6-65 | 25-11-66 | 29-8-67 |
| 119 Аокимо | Sumitomo, Uraga | 2-10-70 | 30-3-72 | 25-11-72 |
| 120 AKIGUMO | Sumitomo, Uraga | 7-7-72 | 23-10-73 | 24-7-74 |
| 121 Yugumo | Sumitomo, Uraga | 4-2-76 | 31-5-77 | 24-3-78 |



Makigumo (DDK 114) - raised fantail for VDS, tripod mainmast

L. & L. Van Ginderen, 7-84



Yugumo (DDK 121) - lattice mainmast

Ships of the World, 7-84

D: 2.100 tons (2,700 fl) S: 27 kts Dim: 114.9 × 11.8 × 4.0 (hull) A: 4/76.2-mm 50-cal. DP Mk 33 (II × 2) -1/ASROC ASW RL (VIII × 1) -1/ 375-mm Bofors ASW RL (IV × 1) -6/324-mm Mk 116 ASW TT (III × 2)

Electron Equipt: Radar: 1/OPS-11, 1/OPS-17, 2/GFCS 1 (see Remarks) Sonar: DDK 113-115: SQS-23; later: OQS-3; also SQS-35(J) VDS (not in DDK 115)

EW: NORL-1B (119-121: NOLR-5) M: 6 Mitsubishi 12UEV 30/40N diesels; 2 props; 26,500 hp Range: 7,000/20 Man: 210-220 tot.

Remarks: Version of the Minegumo class completed with ASROC instead of DASH. DK 113-115 and 119 were given U.S. Mk 56 gun director forward (Mk 35 radar) and Mk 63 GFCS aft (Mk 34 radar on after gunmount); DDK 120 and 121 got two Japanese GFCS-1 systems instead. DDK 113 has Mitsui diesels. DDK 113 and 114 have raised sterns to house VDS; on DDK 119-121 the VDS was installed during construction, and, therefore, the stern was not raised. Final three have lattice mainmasts and a bulwark above the pilothouse.

3 Minegumo class (DDK)

| | Bldr | Laid down | L | In serv. |
|---------------|---------------------|-----------|----------|----------|
| 116 MINEGUMO | Mitsui, Tamano | 14-3-67 | 16-12-67 | 21-8-68 |
| 117 Natsugumo | Uraga, Yokosuka | 26-6-67 | 25-7-68 | 25-4-69 |
| 118 Murakumo | Maizuru, Heavy Ind. | 19-10-68 | 15-11-69 | 21-8-70 |

D: 2,100 tons (2,750 fl) S: 27 kts Dim: 114.9 × 11.8 × 4.0 (hull)

A: DDK 116, 117; 4/76.2-mm 50-cal. DP Mk 33 (II × 2); DDK 118: 1/76-mm OTO Melara Compact, 2/76.2-mm DP Mk 33 (II × 1)-1/ASROC Mk 116 ASW RL (VIII \times 1, with reloads) -1/375-mm Bofors ASW RL (IV \times 1) -6/324-mm Type 68 ASW TT (III \times 2)



Natsugumo (DDK 117) - ASROC aft

Ships of the World, 1984



Murakumo (DDK 118) -with OTO Melara gun and ASROC aft

Electron Equipt: Radar: 1/OPS-11, 1/OPS-17; DDK 116: 1/Mk 35, 1/SPG-34; DDK 118: 1/GFCS-2-12, 1/GFCS-1; DDK 117: 1/GFCS-1, 1/SPG-34

> Sonar: OQS-3—DDK 118: SQS-35(J) VDS also EW: NOLR-5

M: 6 Mitsubishi 12UEV 30/40 diesels; 2 props; 26,500 hp

Range: 7,000/20 Man: 19 officers, 196 men

Remarks: Originally differed from the Yamagumo class in having a DASH drone-helicopter facility instead of ASROC, but DASH is no longer carried. In 1976, DDK 118 had an OTO Melara 76-mm gun and the prototype GFCS-2-12 radar director substituted for her after 76.2-mm twin mount and U.S. Mk 63 control system; in 1979, she received an ASROC launcher on what had been her DASH flight deck. DDK 116 and 117 received ASROC in 1982-83. DDK 116 has a U.S. Mk 56 GFCS (with Mk 35 radar) forward: the other two have a Japanese GFCS-1, and DDK 116 and 117 have a Mk 63 GFCS aft. DDK 118, with VDS, is 1.0-m longer and displaces 50 tons more.

1 Akizuki class (DD)

Bldr Laid down L In serv. Shin-Mitsubishi, Kobe 162 Teruzuki 15-8-58 24-6-59 29-2-60



Teruzuki (DD 162)

Ships of the World, 1983

D: 2,300 tons (3,100 ft) S: 32 kts Dim: 118.0 (115.0 pp) \times 12.0 \times 4.02 A: 3/127)mm 54-cal. DP Mk 39 (I \times 3) — 4/76.2-mm 50-cal. DP Mk 33 (II \times 2) 4/533-mm TT (IV × 1) - 1/375-mm Bofors ASW RL (IV × 1) - 2/Mk 15 trainable Hedgehogs-6/324-mm Type 58 ASW TT (III × 2)

Electron Equipt: Radar: 1/OPS-1, 1/OPS-15, 3/Mk 34 Sonar: SQS-23, OQA-1 VDS - EW: NOLR-1

M: DD 161: 2 sets Mitsubishi-Escher-Wyss GT; DD 162: 2 sets Westinghouse GT; 2 props; 45,000 hp

Boilers: 4; 43 kg/cm2, 454°C Man: 330 tot.

REMARKS: Weapons and ASW sensors moderrized in 1976-77, the Bofors ASW RL replacing a U.S. Mk 108 "Weapon Alfa," VDS being added, and SQS-23 replacing SQS-29. The 127-mm guns were removed from U.S. Midway-class carriers. Two U.S. Mk 57 and one Mk 63 gunfire-control systems are carried. Four reload 533-mm torpedoes can be stowed on deck. Sister Akizuki (DD 161) served as Fleet Flagship until 27-3-85 when reclassified as an auxiliary (ASU).

Note: All three Murasame-class destroyers have been reclassified as auxiliaries (ASU): Murasame (DD 107) and Yudachi (DD 108) on 30-3-84, and Harusame (DD 109) on

♦ 2 Ayanami class (DD)

| | Bldr | Laid down | L | In serv. |
|--------------|---------------------|-----------|---------|----------|
| 111 ONAMI | Ishikawajima, Tokyo | 20-3-59 | 13-2-60 | 29-8-60 |
| 112 MAKINAMI | Iino, Maizuru | 20-3-59 | 25-4-60 | 30-10-60 |



Onami (DD 111)

Ships of the World, 1981

D: 1,700 tons (2,400 fl) S: 32 kts Dim: 109.0 × 10.7 × 3.7 (light)

A: 6/76.2-mm DP Mk 33 (II × 3) - 4/533-mm TT (IV × 1) - 2/Mk 15 trainable Hedgehog −6/324-mm Type 68 ASW TT (III × 2)

Electron Equipt: Radar: 1/OPS-15, 1/OPS-1, 2/Mk 34

Sonar: OQS-12 or 14; (DD 110: OQA-1 VDS also) EW: NORL-1

M: DD 111: Hitachi-G.E. GT; DD 112: Mitsubishi-Escher-Wyss GT; 2 props; 35,000 hp

Boilers: 2; 43 kg/cm², 454°C Range: 6,000/18

Man: 220-230 tot.

REMARKS: The boilers in DD 110 are Hitachi-Babcock & Wilcox; in DD 112: Mitsubishi. There are two U.S. Mk 63 GFCS. OPS-2 is the Japanese version of the U.S. SPS-12.

Four sisters, Ayanami (DD 103), Isonami (DD 104), Uranami (DD 105), and Shikinami (DD 106) were reclassified as auxiliaries in 1982 and are listed on later pages, as is sister Takanami (DD 110), reclassified 27-3-85.

FRIGATES (DE)

ullet 0 (+1+...) new program

Remarks: Funds for a new frigate of 1,600 tons standard displacement were requested in the 1984 Budget but were rejected; none was requested for 1985. The design is being further refined to about 1,900 tons. It will have CODOG propulsion, be about 110 m o.a., and may incorporate the new U.S. RAM point-defense missile system in its armament suite. One per year in the 1986 and 1987 Budgets are projected.

2 Yubari class

| | Bldr | Laid down | L | In serv. |
|-------------|------------------|-----------|---------|----------|
| 227 YUBARI | Sumitomo, Uraga | 9-2-81 | 22-2-82 | 18-3-83 |
| 228 Yubetsu | Hitachi, Maizuru | 14-1-82 | 25-1-83 | 3-84 |



Yubari (DE 227)

JMSDF, 1984



Yubetsu (DE 228)

Ships of the World, 2-84

D: 1,470 tons (1,760 fl) S: 25 kts Dim: $91.0 \times 10.8 \times 3.6$ (hull) A: 8/Harpoon SSM (IV \times 2) -1/76-mm OTO Melara DP -1/375-mm Bofors ASW RL (IV × 1) -6/324-mm Type 68 ASW TT (III × 2)

Electron Equipt: Radar: 1/OPS-19 nav., 1/OPS-28, 1/GFCS-2-21

Sonar: OQS-4-EW: NOLQ-6C passive, OLT-3 jammer, Mk 36 SRBOC chaff RL (VI × 2)

M: CODOG: 1 Kawasaki-Rolls-Royce Olympus TM-3B gas turbine, 28,390 hp; 1 Mitsubishi 6DRV 35/44 diesel, 5,000 hp; 2 CP props

Range: . . . Man: 98 tot.

Remarks: An enlarged version of the Ishikari class, presumably as the earlier ship is too cramped for the mission requirements. Greater length permits later addition of a Vulcan/Phalanx gatling AA gun aft. DE 227 ordered under 1979 Budget, DE 228 under the 1980 Budget. A third was requested for the 1982 Budget, but was not authorized. Planned installation of a U.S. Mk 15 CIWS (Vulcan/Phalanx) aft has not

1 Ishikari class

Laid down Bldr In serv. 226 Ishikari Mitsui, Tamano 17-5-79 18-3-80 30-3-81



Ishikari (DE 226) - Harpoon missiles aft

L. & L. Van Ginderen, 11-84

D: 1,200 tons (1,450 fl) S: 25 kts Dim: 84.5 × 10.0 × 3.5 (mean hull)

A: 8/Harpoon SSM (IV × 2) − 1/76-mm DP OTO Melara − 1/375-mm Bofors ASW RL (IV × 1) -6/324-mm Type 68 ASW TT

Electron Equipt: Radar: 1/OPS-19 nav., 1/OPS-28, 1/GFCS-2-21

Sonar: OQS-4

EW: NOLQ-6C passive, OLT-3 jammer, Mk 36 SRBOC chaff $RL(VI \times 2)$

M: CODOG: 1 Kawasaki-Rolls-Royce Olympus TM-3B gas turbine, 28,390 hp; 1 Mitsubishi 6DRV 35/44 diesel, 5,000 hp; 2 CP props

Man: 90 tot.

REMARKS: Smaller, more lightly armed, faster, and with fewer sensors than the preceding Chikugo class. Aluminum superstructure. Either the gas turbine or the single diesel will drive both propellers. Ordered under 1977 program. 19 kts max. on diesel. The Combat Information Center (CIC) is below the waterline. Highly automated ship with very small crew.

♦ 11 Chikugo class

| | Bldr | Laid down | L | In serv. |
|-------------|---------------------|-----------|----------|----------|
| 215 Снікиво | Mitsui, Tamano | 9-12-68 | 13-1-70 | 31-7-70 |
| 216 AYASE | Ishikawajima, Tokyo | 5-12-69 | 16-9-70 | 20-7-71 |
| 217 Мікимо | Mitsui, Tamano | 17-3-70 | 16-2-71 | 26-8-71 |
| 218 Токасні | Mitsui, Tamano | 11-12-70 | 25-11-71 | 17-5-72 |
| 219 IWASE | Mitsui, Tamano | 6-8-71 | 29-6-72 | 12-12-72 |
| 220 CHITOSE | Hitachi, Maizuru | 7-10-71 | 25-1-73 | 21-8-73 |
| 221 Niyodo | Mitsui, Tamano | 20-9-72 | 28-8-73 | 8-2-74 |
| 222 Teshio | Hitachi, Maizuru | 11-7-73 | 29-5-74 | 10-1-75 |
| 223 Yoshino | Mitsui, Tamano | 28-9-73 | 22-8-74 | 6-2-75 |
| 224 Kumano | Hitachi, Maizuru | 29-5-74 | 24-2-75 | 19-11-75 |
| 225 Noshiro | Mitsui, Tamano | 27-1-76 | 23-12-76 | 31-8-77 |



Ayase (DE 216)

Ships of the World, 1977



Noshiro (DE 225)

Ships of the World, 1980

FRIGATES (DE) (continued)

D: 1,470-1,530 tons (1,700-1,800 fl) S: 25 kts Dim: $93.0 \times 10.8 \times 3.5 \text{ (hull)}$

A: 2/76.2-mm 50-cal. DP Mk 33 (II × 1) - 2/40-mm AA (II × 1) - 1/ASROC

Mk 116 ASW RL (VIII × 1) — 6/324-mm Type 68 ASW TT (III × 2) Electron Equipt: Radar: 1/OPS-16, 1/OPS-14, 1/GFCS-1B—EW: NOLR-5 Sonar: OQS-3, SQS-35(J)(see Remarks)

M: 4 Mitsubishi-Burmeister & Wain UEV 30/40 or Mitsui 28VBC-38 diesels; 2 props; 16,000 hp

Range: 10,700/12; 12,000/9 Man: 13 officers, 152 men

REMARKS: To date, SQS-35(J) towed, variable-depth sonar has been mounted in only five units; it is stowed in an open well at the stern, offset to starboard. These are the smallest ships in any navy to carry ASROC. A Mk 51 director (no radar) controls the twin 40-mm mount. DE 215 and 220 are 1,480 tons std., DE 216-219 and 221 are 1,470 tons std.; later units 1,500 tons std. DE 215, 217-219, 221, 223, 225 have the Mitsubi-

4 Isuzu class (DE)

| | Bldr | Laid down | L | In serv. |
|--------------|----------------------|-----------|---------|----------|
| 211 Isuzu | Mitsui, Tamano | 16-4-60 | 17-1-61 | 29-7-61 |
| 212 Mogami | Mitsubishi, Nagasaki | 4-8-60 | 13-3-61 | 28-10-61 |
| 213 KITAKAMI | Ishikawajima, Tokyo | 7-6-62 | 21-6-63 | 27-2-64 |
| 214 Оні | Maizuru, Heavy Ind. | 10-6-62 | 15-6-63 | 22-1-64 |



Mogami (DE 212) - with VDS

Ships of the World, 1983



Ohi (DE 214)

Ships of the World, 1984

D: 1,490 tons (1,790 fl) **S:** 25 kts **Dim:** $94.0 \times 10.4 \times 3.5$ (hull) A: 4/76.2-mm 50-cal. DP Mk 33 (II × 2) - 1/375)mm Bofors ASW RL (IV × 1) - DE 213, 214: 6/324-mm Type 68 ASW TT (III × 2) — 1/d.c. projector (not

on DE 212 and 213)

Electron Equipt: Radar: 1/OPS-1, 1/OPS-16, 2/Mk 34 — EW: NOLR-1 Sonar: OQS-12 or -14; DE 212, 213: OQA-1 VDS also

M: Diesels; 2 props; 16,000 hp (see Remarks) Man: 180 tot.

Remarks: Each has a different diesel propulsion plant: DE 211: 4 Mitsui 35 VBU 45V; DE 212: 2 Mitsubishi UET 52/65; DE 213: 4 Mitsubishi UEV 30/40; and DE 214: 4 Mitsui 28 VBU 38. DE 212, which has only two main engines, has a smaller stack. Have two U.S. Mk 63 GFCS (Mk 34 radar on gunmounts) for the guns.

GUIDED-MISSILE PATROL BOATS

♦ 0 (+1+5) new construction

| | Bldr | Laid down | L | In serv. |
|--------------------|------------------------|-----------------|----|----------|
| · · · N. · · · · · | 4.40 | | | 1989 |
| D: 250 tons (f | f) S: 40 kts | Dim: × | × | |
| A: 4/Harpoon SSN | $I(II \times 2) - 1/7$ | 6-mm OTO Melara | DP | |
| Electron Equipt: | Radar: | | | |
| Mr. 0 Mrs. 1111 Co | OTT 1 1 0 | 10 000 1 | | |

M: 3 Mitsubishi S20U diesels; 3 props; 18,000 hp

Man: 20 tot.

Remarks: First unit was to have been in 1983 Budget, but was postponed to 1986 to permit further design definition. Class of six planned to replace the PT 11 class. Will have conventional planing hulls. Another 12 may be built later.

PATROL BOATS (PC)

 2 Mizutori class Bldr: Sasebo Dockyard

| | Laid down | L | In serv. |
|---------------|-----------|---------|----------|
| 319 Shiratori | 29-2-64 | 8-10-64 | 26-2-65 |
| 320 Hiyodori | 26-2-65 | 29-9-65 | 28-2-66 |

REMARKS: Data as for remainder of this 8-ship class, which can be found on the auxiliary pages under ASU. This pair likely to be reclassified ASU at end 3-86.

TORPEDO BOATS (PT)

♦ 5 PT 11 class Bldr: Mitsubishi, Shimonoseki

| | Laid down | L | In serv. | | Laid down | L | In serv. |
|-----------|-----------|-------|----------|-----------|-----------|---|----------|
| 811 PT 11 | 17-3-70 | 10-70 | 23-3-71 | 814 PT 14 | 23-3-72 | | 10-7-73 |
| 812 PT 12 | 22-4-71 | 7-72 | 8-72 | 815 PT 15 | 23-4-74 | | 8-1-75 |
| 813 PT 13 | 28-3-72 | 7-72 | 12-72 | | | | |



PT 13 (813)

Ships of the World

D: 100 tons (125 fl) **S:** 40 kts **Dim:** $35.0 \times 9.2 \times 1.2$ **A:** 2/40-mm AA (I \times 2) -4/533-mm TT (I \times 4)

Electron Equipt: Radar: 1/OPS-13 Man: 26 tot.

M: CODAG: 2 Ishikawajima IM-300 gas turbines, 2 Mitsubishi 24 WZ-31MC diesels; 3 props; 11,000 hp Range: 300/40; 1,000/18

Remarks: Class planned for disposal commencing 3-89.

PATROL CRAFT (PB)

• 9 PB type Bldr: Ishikawajima, Yokohama

PB 19 to PB 27 (PB 19-24 in serv. 31-3-72: others, 29-3-73)

D: 18 tons S: 20 kts Dim: 17.0 × 4.3 × 0.8 A: 1/20-mm AA (aft) Electron Equipt: Radar: 1/OPS-29 nav. Range: 400/20 Man: 5 tot. M: 2 Isuzu 17T-MF RCOR diesels; 2 props; 760 hp

Remarks: Fiberglass hulls. Two additional units delivered 3-79 and 28-3-80 for use as radio-controlled surface gunnery target-towing craft; 850 hp, 25 kts.

MINE WARFARE SHIPS

 1 minelayer (MMC) Bldr: Hitachi, Maizuru

Laid down T. In serv. 31-3-71 30-9-71 951 Souya 9-7-70



Souya (MMC 951) with minesweeper Sakate (643)

JMSDF, 1984

D: 2,150 tons (3,250 fl) **S**: 18 kts **Dim**: $99.0 \times 15.0 \times 4.2$ (hull)

A: 2/76.2-mm DP Mk 33 (II × 1) - 2/20-mm AA (I × 2) - 6/324-mm Mk 32 ASW TT (III × 2) - 200 mines

Electron Equipt: Radar: 1/OPS-14, 1/OPS-16, 1/GFCS-1

Sonar: SQS-11A

M: 4 Kawasaki-M.A.N. V6V 22/30 ATL diesels; 2 props; 6,400 hp Range: 7,500/14 Man: 185 tot.

MINE WARFARE SHIPS (continued)

REMARKS: Platform for KV-107-II mine-countermeasures helicopter, six mine rails, two external, four through the transom stern. Can also act as an ASW escort. Often acts as flagship for mine countermeasures forces.

◆ 1 mine-countermeasures support ship/minelayer (MST)

| | Bldr | Laid down | L | In serv. |
|------------|----------------------|-----------|---------|----------|
| 462 Hayase | Ishikawajima, Haruna | 16-9-70 | 21-6-71 | 6-11-71 |



Hayase (MST 462)

Ships of the World, 1984

D: 2,000 tons (3,050 fl) S: 18 kts Dim: 99.0 × 13.0 × 3.8

A: 2/76-mm 50-cal. DP (II × 1) -2/20-mm AA (I × 2) -6/324-mm Mk 32 ASW TT (III × 2) - 200 mines

Electron Equipt: Radar: 1/OPS-17, 1/OPS-14, 1/Mk 34 Sonar: SQS-11A

M: 4 Kawasaki-M.A.N. V6V 22/30 ATL diesels; 2 props; 6,400 hp

REMARKS: The Hayase is similar to the Souya but has no forecastle, and has five mine rails exiting through the transom stern. She has a U.S. Mk 63 gun-control system. Fantail cleared as a platform for KV-107-II mine-countermeasures helicopters.

◆ 1 Kasado-class mine-countermeasures support ship (MST)

Bldr L In serv. 474 Otsu (ex-MSC 621) Nippon Kokan, Tsurumi 24-2-65 5-11-64



Otsu (MST 474)

1981

D: 330 tons (360 fl) S: 14 kts Dim: 45.70 × 8.38 × 2.30 A: 1/20-mm AA Electron Equipt: Radar: OPS-9 - Sonar: ZQQ-2

M: 2 Mitsubishi YV10Z-DE diesels; 2 props; 1,200 hp Man: . . .

Remarks: Reclassified 18-3-81 to replace Kouzo (MST 473) of the same class. Former wooden-hulled minesweeper converted to support minesweeping boats.

♦ 0 (+1+5) new construction deep-sea minesweepers

| | Bldr | Laid down | L | In serv. |
|---|---------------|------------------|-------|----------|
| N | 4.4.9 | * * * | * * * | 0.00 |
| D: 1,000 tons A: Elect M: Diesels; Man: 70 tot. | ron Equipt: . | m: × , , . × . , | | |
| D | | 6 1000 D 1 14 | | |

REMARKS: First unit programmed for 1987 Budget, with one per year thereafter to a total of six. Intended to deploy Type S-7 deep-sea minehunting system and Type S-8 deep-sea moored minesweeping system.

♦ 0 (+2+...) glass-reinforced plastic mine hunters

| | Bldr | Laid down | T. | In serv. |
|----------------|---------------------------------|-----------|----|----------|
| 666 N 667 N | | | | |
| | S: 14 kts Dir JM-61-MB gatli | n: × × | | |

Electron Equipt: Radar: 1/. . . - Sonar: . . . M: 2 diesels; 2 CP props; 1,440 hp Man: . . .

Remarks: Essentially a GRP-hulled version of the Hatsushima class. First two in 1985 Budget.

15 (+2) Hatsushima-class minehunter/minesweepers (MSC)

| | Bldr | Laid down | L | In serv. |
|----------------|-----------------------|-----------|----------|----------|
| 649 Hatsushima | Nippon Kokan, Tsurumi | 6-12-77 | 30-10-78 | 30-3-79 |
| 650 Ninoshima | Hitachi, Kanagawa | 8-5-78 | 9-8-79 | 19-12-79 |
| 651 Мічаліма | Nippon Kokan, Tsurumi | 8-11-78 | 18-9-79 | 29-1-80 |
| 652 Nenoshima | Nippon Kokan, Tsurumi | 4-10-79 | 25-7-80 | 25-12-80 |
| 653 Ukishima | Hitachi, Kanagawa | 15-5-79 | 11-7-80 | 27-11-80 |
| 654 Oshima | Hitachi, Kanagawa | 2-6-80 | 17-6-81 | 26-11-81 |
| 655 Милима | Nippon Kokan, Tsurumi | 4-8-80 | 2-6-81 | 26-11-81 |
| 656 YAKUSHIMA | Nippon Kokan, Tsurumi | 15-6-81 | 22-6-82 | 17-12-82 |
| 657 NARUSHIMA | Hitachi, Kanagawa | 29-5-81 | 7-6-82 | 17-12-82 |
| 658 Снісніліма | Hitachi, Kanagawa | 2-6-82 | 13-7-83 | 16-12-83 |
| 659 Toroshima | Nippon Kokan, Tsurumi | 30-6-82 | 23-6-83 | 16-12-83 |
| 660 Наналіма | Nippon Kokan, Tsurumi | 20-5-83 | 27-6-84 | 18-12-84 |
| 661 Takashima | Hitachi, Kanagawa | 7-6-83 | 18-6-84 | 18-12-84 |
| 662 NEWAJIMA | Hitachi, Kanagawa | 21-5-84 | 6-85 | 12-85 |
| 663 Еталіма | Nippon Kokan, Tsurumi | 22-5-84 | 6-85 | 12-85 |
| 664 N | Nippon Kokan, Tsurumi | 10-5-85 | 6-86 | 12-86 |
| 665 N | Hitachi, Kanagawa | 16-5-85 | 6-86 | 12-86 |



Toroshima (MSC 659)

Ships of the World, 1984



Miyajima (MSC 651)

L. & L. Van Ginderen, 11-84

D: 440 tons (approx 620 fl) S: 14 kts Dim: 55.0 × 9.4 × 2.4

A: 1/20-mm AA (see Remarks)

Electron Equipt: Radar: OPS-9 - Sonar: ZQS-2B

M: 2 Mitsubishi YV12ZC-15/20 diesels; 2 CP props; 1,440 hp Man: 45 tot.

Remarks: Expansion of the Takami design. Being equipped with Type-54 mobile minehunting devices, which carry and lay their own disposal charges. MSC 653 and later have a 20-mm Type JM-61-MB gatling gun AA. Wooden construction.

◆ 18 Takami-class minehunter/minesweepers

| | Bldr | L | In serv. |
|-------------|------------------------|----------|----------|
| 630 TAKAMI | Nippon, Kokan, Tsurumi | 15-7-69 | 15-12-69 |
| 631 Iou | Hitachi, Kanagawa | 12-8-69 | 22-1-70 |
| 632 MIYAKE | Nippon Kokan, Tsurumi | 3-6-70 | 19-11-70 |
| 633 Utone | Hitachi, Kanagawa | 6-4-70 | 3-9-70 |
| 634 Awaji | Nippon Kokan, Tsurumi | 11-12-70 | 29-3-71 |
| 635 Toushi | Hitachi, Kanagawa | 13-12-70 | 18-3-71 |
| 636 Teuri | Nippon Kokan, Tsurumi | 10-71 | 10-3-72 |
| 637 Murotsu | Hitachi, Kanagawa | 10-71 | 3-3-72 |
| 638 Tashiro | Nippon Kokan, Tsurumi | 2-4-73 | 30-7-73 |
| 640 TAKANE | Nippon Kokan, Tsurumi | 8-3-74 | 28-8-74 |
| 641 Muzuki | Hitachi, Kanagawa | 5-4-74 | 28-8-74 |
| 642 Yokose | Nippon Kokan, Tsurumi | 21-7-75 | 15-12-75 |
| 643 SAKATE | Hitachi, Kanagawa | 5-8-75 | 17-12-75 |
| 644 Oumi | Nippon Kokan, Tsurumi | 28-5-76 | 18-11-76 |
| 645 FUKUE | Hitachi, Kanagawa | 12-7-76 | 18-11-76 |
| 646 OKITSU | Nippon Kokan, Tsurumi | 4-3-77 | 20-9-77 |
| 647 HASHIRA | Hitachi, Kanagawa | 8-11-77 | 28-3-78 |
| 648 Iwai | Nippon Kokan, Tsurumi | 8-11-77 | 28-3-78 |

D: 380 tons S: 14 kts Dim: 52.0 × 8.8 × 2.4 A: 1/20-mm AA

Electron Equipt: Radar: OPS-9 - Sonar: ZQS-2

M: 2 Mitsubishi YV12ZC-15/20 diesels; 2 CP props; 1,440 hp Man: 45-47 tot.

MINE WARFARE SHIPS (continued)



Utone (MSC 633)

L. & L. Van Ginderen, 5-84

Remarks: ZQS-2 sonar is a license-built version of the British Type 193-M minehunting sonar. OPS-9 radar, used in conjunction with a Mk 20 plotter, is a Japanese version of the British Type 978. These ships are of wooden construction, and they carry four divers for mine clearance. Sister Miyato (MSC 639) stricken 31-3-82. Carry U.S. Mk 4 acoustic noisemaker gear and S2 wire sweep.

Note: The final three Kasado-class minesweepers, Minase (MSC 627), Ibuki (MSC 628), and Katsura (MSC 629) were reclassified as service craft YAS 79-81 on 26-1-84.

6 inshore minesweepers (MSB)
 Bldrs: Odd-numberd craft: Hitachi, Kanagawa; even-numbered craft: Nippon Kokan, Tsurumi

| | In serv. | | In serv. | | In serv. |
|---------|----------|---------|----------|---------|----------|
| MSB 707 | 30-3-73 | MSB 709 | 28-3-74 | MSB 711 | 10-5-75 |
| MSB 708 | 27-3-73 | MSB 710 | 29-3-74 | MSB 712 | 24-4-75 |



MSB 709

Ships of the World

D: 58 tons (fl) S: 10 kts Dim: 22.5 × 5.4 × 1.1 A: None M: 2 Mitsubishi 4ZV20 diesels; 2 props; 480 hp Man: 10 tot.

Remarks: Wooden construction. Supported by Otsu (MST 474). No radar.

AMPHIBIOUS WARFARE SHIPS

Note: The JMSDF had planned to request two 3,500-ton tank landing ships (LST) and three 350-ton utility landing craft (LCU) during 1983-87, but these units have been thus far rejected by the government as being too construable as offensive in nature and because of fiscal constraints. As with the other JMSDF amphibious warfare ships, their primary function would be in logistic support.

♦ 3 Miura-class landing ships (LST) Bldr: Ishikawajima Harima, Tokyo

| | Laid down | L | In serv. |
|--------------|-----------|---------|----------|
| 4151 MIURA | 26-11-73 | 13-8-74 | 29-1-75 |
| 4152 Олка | 10-6-74 | 2-9-75 | 27-3-76 |
| 4153 SATSUMA | 26-5-75 | 12-5-76 | 17-2-77 |



Miura (LST 4151)

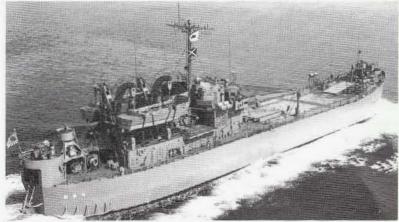
Ships of the World

D: 2,000 tons (3,200 fl) S: 14 kts Dim: 98.0 (94.0 pp) \times 14.0 \times 3.0 A: 2/76.2-mm 50-cal. Mk 33 DP (II \times 1) — 2/40-mm AA (II \times 1) Electron Equipt: Radars: 1/OPS-14, 1/OPS-16, 1/GFCS-1 Man: 118 tot. M: 2 Kawasaki-M.A.N. V8V 22/30 AMTL diesels; 2 props; 4,400 hp

Remarks: Carry 180 troops, 1,800 tons cargo, LST 4153 has carried prototype OTO Melara Compact gun at bow. All have two LCVP in davits and two LCM(6) on deck, the latter served by a traveling gantry with folding rails that can be extended over the sides. GFCS-1 fwd controls 76.2-mm guns; U.S. Mk 51 Mod. 2 GFCS aft controls 40-mm mount. Tank deck can hold 10 Type 74 battle tanks.

◆ 3 Atsumi class (LSTs) Bldr: Sasebo Heavy Industries Laid down L In serv.

| Daid down | 4.4 | THE SCIA. |
|-----------|--------------------|-----------------------------------|
| 7-12-71 | 13-6-72 | 27-11-72 |
| 23-4-73 | 3-8-73 | 21-12-73 |
| 18-11-76 | 16-6-77 | 27-10-77 |
| | 7-12-71 23-4-73 | 7-12-71 13-6-72 23-4-73 3-8-73 |



Nemuro (LST 4103)

Ships of the World

D: 1,480 tons (2,400 fl) S: 14 kts Dim: 89.0 × 13.0 × 2.7 A: 4/40-mm AA (II × 2) Electron Equipt: Radar: 1/OPS-9 M: 2 Kawasaki-M.A.N. V8V 22/30 AMTL diesels; 2 props; 4,400 hp Range: 4,300/12 Man: 100 tot.

Remarks: Can carry 120 men and 20 vehicles or 400 tons cargo. LST 4102 and 4103 are 1,550 tons standard and have a max. speed of 13 kts. Have 2 U.S. Mk 51 Mod. 2 GFCS, two LCVP in davits, and can carry one LCVP on deck, amidships.

♦ 2 Yura-class utility landing ships (LSU)

Bldr: Sasebo Heavy Industries

| | Laid down | L | In serv. |
|-----------|-----------|---------|----------|
| 4171 YURA | 23-4-80 | 10-8-80 | 27-3-81 |
| 4172 Nото | 23-4-80 | 1-11-80 | 27-3-81 |



Yura (LSU 4171) — gatling AA gun atop pilothouse L. & L. Van Ginderen, 8-84

D: 500 tons (590 fl) S: 12 kts Dim: 58.0 × 9.5 × 1.7 (aft)

A: 1/20-mm JM 61-MB gatling AA

M: 2 Fuji 6L 27.5X diesels; 2 CP props; 3,000 hp Man: 32 tot.

Remarks: Both in 1979-80 Budget; request for a third in 1981 Budget denied. Bow doors and ramp.

◆ 15 U.S. LCM(6)-class landing craft

D: 24 tons (56 fl) S: 10 kts Dim: 17.07 × 4.37 × 1.17 (aft)

M: 2 Yanmar diesels; 2 props; 450 hp

Remarks: Total includes 6 units carried aboard the Miura-class LSTs. Built in Japan.

◆ 22 U.S. LCVP-class landing craft

D: 13 tons (fl) S: 8 kts Dim: 10.90 × 3.21 × 1.04 (aft)

M: 1 Yanmar diesel; 1 prop; 180 hp

Remarks: Japanese-built, most with GRP hulls. Total includes the 12-15 carried by the 6 LSTs.

HYDROGRAPHIC SHIPS

♦ 0 (+1) new construction Bldr: Hitachi, Maizuru

Laid down L In serv. 5104 Wakasa 21-8-84 21-5-85 3-86

D: 2,000 tons S: . . . Dim: . . . × . . . × . . .

A: None M: 2 Fuji 6 LS 27.5XF diesels; 2 CP props; 3,000 hp Man: . . .

Remarks: Construction authorized in 1983 budget. Ordered 29-3-84.

♦ 1 Suma class (AGS) Bldr: Hitachi Heavy Ind., Maizuru

Laid down L In serv. 5103 Suma 24-9-80 1-9-81 30-3-82



Suma (AGS 5103)

Ships of the World, 1982

D: 1,180 tons S: 15 kts Dim: 72.0 × 12.8 × 3.4

A: None M: 2 Fuji 6 LS 27.5X diesels; 2 CP props; 3,000 hp Man: 65

Remarks: Built under 1979-80 Budget to begin replacement of the Kusado-class former minesweepers used as coastal survey ships. Carries one 7.9-m boat and one 11-m inshore survey launch. Passive tank stabilization, bow-thruster fitted. Operated by the "Ocean Management Group."

• 1 Futami class (AGS)

Bldr Laid down L In serv.
5102 Futami Mitsubishi, Shimonoseki 20-1-78 9-8-78 27-2-79



Futami (AGS 5102)

L. & L. Van Ginderen, 6-84

D: 2,050 tons (3,000 fl)
 S: 16 kts
 Dim: 96.8 (90.0 pp) × 15.0 × 4.3
 A: None Electron Equipt: Radar: 1/OPS-18
 Man: 105 tot.

M: 2 Kawasaki-M.A.N. V8V 22/30 ATL diesels; 2 CP props; 4,400 hp

Remarks: Configured for both hydrographic surveying and cable-laying. Bow-thruster. Has three diesel and one gas-turbine generator sets. Carries one RCV-225 remote-controlled unmanned submersible.

• 1 Akashi class (AGS)

Bldr Laid down L In serv. 5101 Аказні Nippon Kokan, Tsurumi 21-9-68 30-5-69 25-10-69

D: 1,420 tons S: 16 kts Dim: 74.0 × 12.9 × 4.3

A: None Electron Equipt: Radar: OPS-9—EW: NOLR-5

M: 2 Kawasake-M.A.N. V8V 22/30 ATL diesels; 2 CP props; 3,800 hp

Range: 16,500/14 Man: 70 crew, 10 scientists

Remarks: Bow-thruster. Two cranes; one 5-ton and one 1-ton. Has extensive electronics intercept arrays, new radar.

• 1 Kasado-class converted minesweepers (MSC) Bldr: Hitachi, Kana-

Laid down L In serv. 5115 AGS 5 (ex-Hario, MSC 618) 19-3-61 10-12-61 23-3-62

D: 340 tons (355 fl) S: 14.5 kts Dim: 45.7 × 8.38 × 2.3

A: None Electron Equipt: Radar: OPS-4

M: 2 Mitsubishi YV10ZC diesels; 2 props; 1,200 hp Man: 30 tot.

Remarks: Sister AGS 1 (AGS 5111. ex-Kasado, MSC 604) stricken 31-3-82; AGS 2 (5112, ex-Habuchi, MSC 608) strcken 4-9-82, AGS 3 (5113, ex-Tatara, MSC 610) stricken 30-3-83, and AGS 4 (ex-Hirado, MSC 614) stricken 30-3-85. Appearance is virtually identical to service craft sisters typed YAS.



Akashi (AGS 5101)

Ships of the World, 1984

EXPERIMENTAL SHIP

• 1 Kurihama class (AGE)

Bldr Laid down L In serv 6101 Kurihama Sasebo Heavy Industries 23-3-79 20-9-79 8-4-80



Kurihama (AGE 6101)

Ships of the World

D: 959 tons S: 15 kts Dim: 68.0 × 11.6 × 3.3 A: Various Electron Equipt: Radar: 1/OPS-9B

M: 2 Fuji 6S 30B diesels; 2 CP props; 2,600 hp (plus 2 electric auxiliary propulsors; 400 hp)

Man: 42 crew + 13 technicians

Remarks: For testing mines, torpedoes, and sonars. In 1979 Budget. Has Flume-type passive stabilization tanks and gas-turbine generators in superstructure. Retractable bow-thruster. Can be rigged for silent operation. Has extra accommodations for trials personnel.

CABLE-LAYER

1 Muroto class (ARC)

Bldr Laid down L In serv.
482 Muroto Mitsubishi, Shimonoseki 28-11-78 25-7-79 27-3-80



Muroto (AGS 482)

JMSDF, 1980

D: 4,544 tons S: 17 kts Dim: 131.0 × 17.4 × 5.7

A: None Electron Equipt: Radar: 1/OPS-9

M: 2 Mitsubishi MTU V8V 22/30 diesels; 2 CP props; 4,400 hp Man: 122 tot.

Remarks: Intended to replace Tsugaru as naval cable layer. Able to lay cable over bow or stern at 2-6 knots. Bow-thruster. Similar to commercial Kuroshio Maru. Has extensive facilities for oceanographic research.

Note: The former cable-layer Tsugaru (ARC 481) was redesignated A5U 7'001 in 1979 and is listed under training ships.

SUBMARINE RESCUE SHIPS

♦ 1 Chiyoda class (ASR)

Bldr Laid down L In serv.
405 Chiyoda Mitsui, Tamano 19-1-83 7-12-83 27-3-85



Chiyoda (ASR 405)

Ships of the World, 1985

D: 3,690 tons (4,450 fl) S: 17 kts (16 sust.)
Dim: 112.5 (106.0 pp) × 17.6 (18.0 max.) × 4.8
A: None Electron Equipt: Radar: 1/OPS-16
M: 2 Mitsui 8LV42M diesels; 2 CP props; 11,500 hp
Man: 120 tot.

Remarks: in 1981 Budget as a replacement for *Chihaya*. Carries a deep-submergence rescue vehicle (DSRV) launched 15-10-84 by Kawasaki, Kobe:

D: 40 tons S: 4 kts Dim: 12.4 × 3.2 × 4.3 (high) M: Electric motors; 40 hp Man: 12 passengers

The DSRV is deployed over the sides, using hoist equipment similar to that of the U.S. Navy's Pigeon (ASR 21) class. There is also a deep-diving rescue bell. The helicopter platform can accommodate an HSS-2 Sea King. Has bow and stern thrusters.

• 1 Fushimi class (ASR)

Bldr Laid down L In serv. 402 Fushimi Sumitomo, Uraga 5-11-68 10-9-69 10-2-70



Fushimi (ASR 402)

Ships of the World, 1984

D: 1,430 tons S: 16 kts Dim: $76.0 \times 12.5 \times 3.8$ Electron Equipt: Radar: OPS-9—Sonar: SQS-11A

M: 1 Kawasaki-M.A.N. V6V 22/30 ATL diesel; 1 prop; 3,000 hp Man: 102 tot.

Remarks: Has one rescue bell, two decompression chambers; one 12-ton crane.

Note: Submarine rescue ship Chihaya (ASR 401) was redesignated ASU 7011 on 27-3-85 on completion of Chiyoda (ASR 405).

REPLENISHMENT OILERS (AOE/AO)

♦ 0 (+1+1) new construction

D: 8,000 tons S: . . . Dim: . . . ×

A: . . . Electron Equipt: Radar: . . .

M: . . . Man: . . .

Remarks: Approved in 1984 Budget, to replace *Hamana*. Will be an all-purpose liquid and solid stores replenishment ship, like *Sagami*. Second unit proposed, for 1986 or 1987 Budget.

♦ 1 Sagami class (AOE)

Bldr Laid down L In serv.
421 Sagami Hitachi, Maizuru 28-9-77 4-9-78 30-3-79

D: 5,000 tons (11,600 fl) S: 22 kts Dim: 146.0 (140.0 pp) × 19.0 × 7.3

A: None Electron Equipt: Radar: 1/OPS-16

M: 2 Type 12 DRV diesels; 2 props; 18,600 hp Range: 9,500/20

Man: 130 tot.

Remarks: Has three stations per side, two for liquid transfers, one for solid. Large helicopter deck but no hangar. In addition to fuel oil, diesel fuel, and JP-5 aviation fuel, carries food and ammunition. 1975 Budget.



Sagami (AOE 421)

JMSDF, 1984

◆ 1 Hamana class (AO)

Bldr Laid down L In serv.
411 Hamana Uraga DY 17-4-61 24-10-61 10-3-62



Hamana (AO 411)

Ships of the World, 1984

D: 2,900 tons (7,550 fl) **S:** 16 kts **Dim:** $128.0 \times 15.7 \times 6.3$ **A:** 2/40-mm AA (II \times 1) **Electron Equipt:** Radar: OPS-9

M: 1 Yokohama-M.A.N. KGZ 6D/150C diesel; 1 prop; 5,000 hp Man: 100 tot.

Remarks: Refitted, 1978-79, with two fueling positions per side. Mk 51 Mod. 2 director for gunmount. Carries 500 tons stores for transfer via highline station forward and about 3,000 tons liquid cargo.

TRAINING SHIPS (TV)

1 Katori-class cadet-training ship (TV)

Bldr Laid down L In serv.
3501 Katori Ishikawajima Harima, Tokyo 8-12-67 19-11-68 10-9-69



Katori (TV 3501)

Pradignac & Leo, 9-83

D: 3,372 tons (4,100 ft) S: 25 kts Dim: 127.5 (122.0 pp) \times 15.0 \times 4.35 A: 4/76.2-mm DP Mk 23 (II \times 2) — 1/375-mm Bofors ASW RL (IV \times 1) — 6/324-mm Mk 32 ASW TT (III \times 2)

Electron Equipt: Radar: 1/SPS-12, 1/OPS-15, 1/Mk 34 Sonar: OQS-3—EW: NOLR-1B

M: 2 sets Ishikawajima GT; 2 props; 20,000 hp Boilers: 2 Rage: 7,000/18 Man: 295 crew + 165 cadets

REMARKS: U.S. Mk 63 GFCS system for 76.2-mm guns. After superstructure contains an auditorium. Helicopter deck is also used for ceremonial functions and calisthenics. An Intelset satellite communication system was added in mid-1979.

◆ 2 Ayanami-class former destroyers (TV)

| 0500 [| Bldr Mitabli Kaba | Laid down | L 30-9-57 | In serv. 14-3-58 |
|-------------------------------|----------------------|-----------|--------------|---------------------|
| 3502 Isonami (ex-DD 104) | Mitsubishi, Kobe | 14-12-56 | 30-9-37 | 14-3-06 |
| 3503 Shikinami (ex-DD 106) | Mitsui, Tamano | 24-12-56 | 25-9-57 | 15-3-58 |

D: 1,700 tons (2,400 ft) **S:** 32 kts **Dim:** $109.0 \times 10.7 \times 3.7$ (mean) **A:** 6/76.2-mm 50-cal, U.S. Mk 33 DP (II \times 3) -2/Mk 15 trainable Hedgehog

ASW mortar - 6/324-mm Type 68 ASW TT (III × 2)

TRAINING SHIPS (TV) (continued)



Isonami (TV 3502)

Ships of the World, 8-84

Electron Equipt: Radar: 1/OPS-15, 1/OPS-2, 2/Mk 34 Sonar: OQS-12 or 14-EW: BLR-1

M: 2 sets Mitsubishi-Escher-Wyss GT; 2 props; 3,500 hp

Boilers: 2 Mitsubishi (TV 3503: Hitachi-Babcock & Wilcox); 43 kg/cm2, 454°C

Range: 6,000/18 Man: 175 crew + 50 cadets

Remarks: Reclassified as training ships on 30-3-83, a duty they had performed since 13-6-75, when their quadruple 533-mm anti-ship torpedo-tube mount was replaced by a classroom deckhouse and they were designated the First Training Unit. Variabledepth sonar removed from TV 3502 in 1983. There are two U.S. Mk 63 GFCS for the three gunmounts, the Mk 34 radars being mounted on two of the gunmounts. OPS-2 is the Japanese designation for the U.S. SPS-6 air-search radar.

♦ 1 Azuma-class target service ship (ATS)

Bldr Laid down In serv. 4201 AZUMA Hitachi, Maizuru 15-7-68 14-4-69 26-11-69



Azuma (ATS 4201)

Ships of the World, 1983

D: 1,950 tons (2,400 fl) S: 18 kts Dim: 98.0 (94.0 pp) × 13.0 × 3.8 A: 1/76.2-mm DP Mk 34—2/Mk 4 torpedo launchers (U.S. Mk 32 torpedoes) Electron Equipt: Radar: 1/OPS-15, 1/SPS-40, 1/TCATS Sonar: SQS-11A

M: 2 Kawasaki-M.A.N. V8V 23/30 ATL diesels; 2 props; 4,000 hp Electric: 700 kw Man: 185 tot.

REMARKS: Has ten KD2R-5 and four BQM-34-AJ drones. Portable catapult on helicopter deck for launching. Hangar is used for drone check-out and storage. Has the only SPS-40 radar in Japanese service. TCATS (Target Control and Tracking System) radar in large radome atop bridge replaced earlier radar, 1983. Mk 51 Mod. 2 director for gun (no radar).

Note: A new ATS of 2,200 tons (std.), similar in configuration to Azuma, was requested under the 1985 Budget but not approved; a 76-mm OTO Melara Compact gun was to have been carried.

SPECIAL USE AUXILIARIES (ASU)

♦ 5 target-support craft (ASU) Bldr: ASU 81-83: Sasebo Heavy Industries; Others: . . .

| 101101 / W10 1011 | Laid down | L | In serv. |
|---------------------|-----------|----------|----------|
| ASU 81 (ex-YAS 101) | 10-10-67 | 18-1-68 | 30-3-68 |
| ASU 82 (ex-YAS 102) | 25-9-68 | 20-12-68 | 31-3-68 |
| ASU 83 (ex-YAS 103) | 2-4-71 | 24-5-71 | 30-9-71 |
| ASU 84 (ex-YAS 104) | 4-2-72 | 15-6-73 | 19-9-73 |
| ASU 85 (ex-YAS 105) | 20-2-73 | 16-7-73 | 19-9-73 |

D: 490 tons (543 fl) S: 14.5 kts Dim: 51.5 × 10.0 × 2.6

Electron Equipt: Radar: OPS-10 (ASU 84: OPS-29; ASU 85: OPS-19)

M: 2 Akasaka UH-527-42 diesels; 2 props; 1,600 hp Range: 2,500/12 Man: 26 men + 14 passengers

REMARKS: ASU 82 is configured as a rescue ship. The others are intended to carry, control, recover, and service up to six KD2R-5 drone target aircraft. ASU 81: 480 tons std.; ASU 85: 500 tons std. Crane and mast configurations aft differ, early units have pole and derrick, later ones have a crane, with a tripod mast stepped on the stack.



ASU 83

Ships of the World, 1984

• 1 former submarine rescue ship (ASU)

Bldr Laid down In serv. 7011 Сигнача Mitsubishi, Yokohama 15-3-60 4-10-60 15-3-61 (ex-ASR 401)



Chihaya (ASU 7011) -as ASR 401

Ships of the World

D: 1,340 tons (1,800 fl) S: 15 kts Dim: 73.0 × 12.0 × 3.9 Electron Equipt: Radar: OPS-4-Sonar: SQS-11A M: 1 Yokohama-M.A.N. G6Z S170 diesel; 1 prop; 2,700 hp Range: 5,000/12 Man: 90 tot.

Remarks: Reclassified as a utility service ship on 27-3-85 after being replaced on submarine rescue duties by the new Chiyoda (ASR 405). Has a McCann rescue bell for six persons, 12-ton crane, four flotation pontoons, and a 4-point mooring system.

1 Akizuku-class former destroyer

Laid down In serv. 7010 AKIZUKI Mitsubishi, Nagasaki 31-7-58 26-6-59 13-2-60 (ex-DD 161)



Akizuki (ASU 7010) -- as DD 161

Ships of the World, 7-84

Remarks: Data as for sister Teruzuki (DD 162), except that crew has been reduced. Reclassified as ASU on 27-3-85, having served for many years as Fleet Flagship.

• 3 Murasame-class former destroyers (ASU)

| | Bldr | Laid down | L | In serv. |
|------------------------------|----------------------|-----------|---------|----------|
| 7006 Murasame (ex-DD 107) | Mitsubishi, Nagasaki | 17-12-57 | 31-7-58 | 28-2-59 |
| 7007 YUDACHI (ex-DD 108) | Ishikawajima, Tokyo | 16-12-57 | 29-7-58 | 25-3-59 |
| 7008 HARUSAME (ex-DD 109) | Uraga DY, Yokosuka | 17-6-58 | 18-6-59 | 15-12-59 |

SPECIAL USE AUXILIARIES (ASU) (continued)



Harusame (ASU 7008) -- as DD 109

Ships of the World, 1983



Yudachi (ASU 7007)

Ships of the World, 1984

D: 1,800 tons (2,400 fl) S: 30 kts Dim: 109.73 × 10.97 × 3.7 (mean)

A: 3/127-mm 54-cal. U.S, Mk 39 DP (II \times 3) — 4/76.2-mm 50-cal. U.S, Mk 33 DP (II \times 2) — 1/Mk 15 trainable Hedgehog ASW mortar (XXXIV \times 1) — ASU 7008 only: 6/324-mm Type 68 ASW TT (III \times 2) — others: 1/Y-gun d.c. mortar (II \times 1) — 1/d.c. rack

Electron Equipt: Radar: 1/OPS-15, 1/OPS-1, 1/Mk 34, 2/Mk 35

Sonar: SQS-29 — EW: NORL-1B M: 2 sets Kampon (ASU 7008: Mitsubishi-Escher-Wyss) GT; 2 props; 35,000 hp

Boilers: 2 Foster-Wheeler-D (ASU 7008: Mitsubishi); 43 kg/cm², 454°C

Range: 6,000/18 Man: . . .

Remarks: ASU 7006 and 7007 reclassified 30-3-84 from destroyers, ASU 7008 on 5-3-85. Hull and machinery spaces similar to those of the *Ayanami* class. Have two U.S. Mk 57 and one U.S. Mk 63 GFCS to control the five gunmounts, U.S. Mk 105 underwater battery fire-control system. OPS-1 is a Japanese equivalent to the U.S. SPS-6 air-search radar.

3 Ayanami-class former destroyers (ASU)

| | Bldr | Laid down | L | In serv. |
|------------------------------|----------------------|-----------|---------|----------|
| 7004 AYANAMI (ex-DD 103) | Mitsubishi, Nagasaki | 20-11-56 | 1-6-57 | 12-2-58 |
| 7005 URANAMI (ex-DD 105) | Kawasaki, Kobe | 1-2-57 | 29-8-57 | 27-2-58 |
| 7009 TAKANAMI (ex-DD 110) | Mitsui, Maizuru | 8-11-58 | 8-8-59 | 30-1-60 |



Uranami (ASU 7005)

Ships of the World, 5-83

D: 1,700 tons (2,400 fl) **S:** 32 kts **Dim:** $109.0 \times 10.7 \times 3.7$ (mean)

A: 6/76.2-mm Mk 33 DP (II × 3) — 2/Mk 15 trainable Hedgehog — 6/324-mm Type 68 ASW TT (III × 2)

Electron Equipt: Radar: 1/OPS-15, 1/OPS-2, 2/Mk 34 Sonar: OQS-12 or 14—EW: NORL-1B M: 2 sets Mitsubishi-Escher-Wyss GT; 2 props; 35,000 hp

Boilers: 2 Mitsubishi (ASU 7009: Hitachi-Babcock & Wilcox); 43 kg/cm², 454°C Range: 6,000/18 Man: 220-230 tot.

Remarks: ASU 7006, 7007 reclassified as utility service ships on 30-3-83, when their quadruple 533-mm TT were removed and VDS was removed from ASU 7004. ASU 7009 reclassified from DD 110 on 27-3-85 and similarly modified. There are two U.S. Mk 63 GFCS for the three gunmounts. OPS-2 is the Japanese designation for the U.S. SPS-6 radar.

Note: The two Harukaze-class former destroyers were stricken, Harukaze (ASU 7002, ex-DD 101) on 5-3-85, and Yukikaze (ASU 7003, ex-DD 102) on 27-3-85.



Takinami (ASU 7009)

Ships of the World, 1985

♦ 1 Tsugaru class (ASU, ex-ARC)

Bldr Laid down L In serv.
7001 Tsugaru (ex-ARC 481) Yokohama SY 18-12-54 19-7-55 15-12-55



Tsugaru (ASU 7001)

L. & L. Van Ginderen, 8-85

D: 2,150 tons S: 13 kts Dim: 103.0 × 14.6 × 4.9

A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/OPS-16

M: 2 Sulzer diesels; 2 props; 3,200 hp Man: 103 tot.

Remarks: Originally completed as a minelayer/cable-layer; between 10-7-69 and 30-4-70 she was lengthened and the amidships part of her hull widened by 2.2 meters at Nippon Kokan, Tsurumi. Also, her cable facilities were greatly enlarged. Redesignated ASU (Auxiliary, Special Use) in 1979.

• 3 Mizutori-class former patrol boats (ASU)

| | Bldr | Laid down | L | In serv. |
|------------------------------|-----------|-----------|----------|----------|
| ASU 61 Otori (ex-PC 313) | Kure SY | 16-12-59 | 27-5-60 | 13-10-60 |
| ASU 62 HATSUKARI (ex-PC 315) | Sasebo DY | 25-1-60 | 24-6-60 | 15-11-60 |
| ASU 63 UMIDORI (ex-PC 316) | Sasebo DY | 15-2-62 | 15-10-62 | 30-3-63 |



Hatsukari (ASU 62)

Ships of the World, 2-83

D: 420 tons (450 fl) S: 20 kts Dim: 60.00 × 7.10 × 2.35

A: 2/40-mm AA (II \times 1) — 1/Mk 10 Hedgehog ASW mortar (XXIV \times 1) — 1/d.c. rack

Electron Equipt: Radar: 1/OPS-35 or OPS-36, 1/Mk 34

Sonar: SQS-11A — EW: BLR-1

M: 2 Kawasaki-M.A.N. V8V diesels; 2 props; 3,800 hp Fuel: 24 tons

Range: 3,000/12 Man: 70 tot.

Remarks: Reclassified for training duties: ASU 61 and 62 on 31-3-82, and ASU 63 on 30-3-84. The two units of the class remaining designated PC may be retyped later as well. Mk 63 GFCS for 40-mm AA. Sisters Kasasagi (ASU 87, ex-PC 314), Mizutori (ASU 88, ex-PC 311), and Yamadori (ASU 90, ex-PC 312) stricken 3-85.

SPECIAL USE AUXILIARIES (ASU) (continued)

♦ 2 Umitaka-class former patrol boats (ASU)

Laid down L ASU 64 WAKATAKA (ex-PC 317) Kure SY 5-3-62 13-11-62 30-3-63 ASU 65 Kumataka (ex-PC 318) Fujinagata, Osaka 20-3-63 21-10-63 25-3-64



Wakataka (ASU 64) - as PC 317

Ships of the World, 1985

D: 490 tons (530 ft) S: 20 kts Dim: 60.0 × 7.1 × 2.4 (hull)

A: 2/40-mm AA (II × 1) -6/324-mm Type 68 ASW TT (III × 2) -1/Mk 10 Hedgehog-1/d.c. rack

Electron Equipt: Radar: ASU 64: 1/OPS-36; ASU 65: 1/OPS-16; both: 1/Mk 34-EW: BLR-1

Sonar: SQS-11A

M: 2 Mitsui-Burmeister & Wain V8V diesels; 2 props; 4,000 hp

Fuel: 24 tons Range: 3,000/12 Man: 80 tot.

Remarks: Reclassified 27-3-85. Mk 63 GFCS for 40-mm AA. Sister Umitaka (ASU 86, ex-PC 309) was stricken 20-2-85 and sister Ootaka (ASU 88, ex-PC 310) on 3-85.

ICEBREAKER (AGB)

1 Shirase class (AGB)

Bldr Laid down L In serv. 11-12-81 5002 SHIRASE Nippon Kokan, Tsurumi 5-3-81 12-12-83



Shirase (AGB 5002)

JMSDF, 1984

D: 11,660 tons (18,900 fl) S: 19 kts Dim: 134.0 × 28.0 × 9.2 M: 6 M.A.N.-Mitsui 12V42M diesels, electric drive; 3 props; 30,000 hp Electron Equipt: Radar: OPS-18, OPS-22 — TACAN: URN-25 Range: 25,000/15 Man: 37 officers, 137 men, plus 60 passengers

Remarks: Built under 1979-80 budget to replace Fuji (AGB 5001). Cargo capacity: 1,000 tons. Hangar and flight deck for 2 HSS-2 and 1 OH-6 helicopters.

The icebreaker Fuji (AGB 5001), inactive since her final deployment in 1982-83, was stricken 11-4-84.

YACHT (ASY)

• 1 former ASW patrol boat, converted (ASY)

Bldr Laid down 91 Hayabusa (ex-PC 308) Mitsubishi, Nagasaki 23-5-56 20-11-56 10-6-57

D: 400 tons S: 13 kts Dim: 58.0 × 7.8 × 2.2 A: None

M: 2 diesels; 2 props; 1,000 hp Man: 35 crew, plus 125 passengers

Remarks: Unique unit, fitted with 5,000-hp gas turbine on centerline shaft, 1962-70. Rebuilt 20-11-77 to 15-4-78 at Yokohama Yacht Co. as naval yacht, with extensive superstructure added aft, new engines. Painted white.

SERVICE SHIPS AND CRAFT

Note: All Japanese Navy service ships and craft are listed below in the alphabetical order of the two- or three-letter designator system employed to define their functions. Self-propelled units have 2-digit hull numbers following the letter designator (as in "YO 01"). Non-self-propelled craft with the same functions have 3-digit numbers starting with "1" (as in "YO 102"). Self-propelled units that have returned to an original type designation after an initial type change receive 3-digit numbers beginning with "2" (as in "YG 202," ex-YO 20, ex-YG 08).



Hayabusa (ASY 91)

Ships of the World, 1984

MINE TRIALS AND SERVICE CRAFT (YAL)

* 1 YAL 01 class

YAL 01 (In serv. 22-3-76)

D: 240 tons (265 fl) S: 12 kts Dim: 37.00 × 8.00 × 1.90

A: Mine rails M: 2 Type 64 H 19-E-4A diesels; 2 props; 800 hp Man: 16 tot.

♦ 3 former U.S. LCU 1466-class landing craft

YAL 02 (L: 23-1-55) YAL 03 (L: 5-1-55) YAL 04 (L: 13-12-54)



YAL 03

Ships of the World, 1984

D: 180 tons (347 fl) S: 9 kts Dim: 35.08 × 10.36 × 1.60 (aft)

A: 2/20-mm AA (I × 2) - mines

M: 3 Gray Marine 64YTL diesels; 3 props; 675 hp Fuel: 11 tons Range: 1,200/6 Man: . . .

REMARKS: Three of the six-unit LCU 2001 class (ex-U.S. LCU 1602-1607), built in Japan under the Offshore Procurement Program), reconfigured to serve as exercise mine planters.

SPECIAL SERVICE CRAFT (YAS)

♦ 12 Kasado-class former coastal minesweepers

| | Bldr | L | In serv. |
|------------------------------|-----------------------|----------|----------|
| YAS 67 MIKURA (ex-MSC 612) | Hitachi, Kanagawa | 14-3-60 | 27-5-60 |
| YAS 71 KARATO (ex-MSC 617) | Nippon Kokan, Tsurumi | 11-12-62 | 23-3-63 |
| YAS 72 MUTUSURE (ex-MSC 619) | Nippon Kokan, Tsurumi | 16-12-63 | 24-3-64 |
| YAS 73 CHIBURI (ex-MSC 620) | Hitachi, Kanagawa | 29-11-63 | 25-3-64 |
| YAS 74 KUDAKO (ex-MSC 622) | Hitachi, Kanagawa | 8-12-64 | 24-3-65 |
| YAS 75 RESHIRI (ex-MSC 623) | Nippon Kokan, Tsurumi | 22-11-65 | 5-3-66 |
| YAS 76 REBUN (ex-MSC 624) | Hitachi, Kanagawa | 7-12-65 | 24-3-66 |
| YAS 77 AMAMI (ex-MSC 625) | Nippon Kokan, Tsurumi | 13-10-66 | 6-3-67 |
| YAS 78 URUME (ex-MSC 626) | Hitachi, Kanagawa | 12-11-66 | 30-1-67 |
| YAS 79 MINASE (ex-MSC 627) | Nippon Kokan, Tsurumi | 10-1-67 | 25-3-67 |
| YAS 80 IBUKI (ex-MSC 628) | Hitachi, Kanagawa | 2-12-67 | 27-2-68 |
| YAS 81 KATSURA (ex-MSC 629) | Nippon Kokan, Tsurumi | 18-9-67 | 15-2-68 |

D: 330-340 tons (350-360 fl) S: 14 kts Dim: 45.7 × 8.38 × 2.30 A: 1/20-mm AA Electron Equipt: Radar: 1/OPS-9 Range: 2,000/10

M: 2 Mitsubishi YV102-DE diesels; 2 props; 1,200 hp Man: 40 tot.

Remarks: Majority converted to serve as mine-disposal divers' support ships. YAS 67 is tender to the Gunnery School. Wooden construction. Sister Koshiki (YAS 63, ex-MSC 615) stricken 1981; YAS 62 Shisaka and YAS 64 Sakito were stricken during 1982; YAS 66 Tsukumi and YAS 70 Hotaka in 3-83, YAS 65 Kanawa on 10-2-84, and YAS 68 Shikine on 30-3-84. YAS 79-81 redesignated from MSC on 21-6-84. Not all are armed.

SPECIAL SERVICE CRAFT (YAS) (continued)



Amami (YAS 77)

Ships of the World, 1984

OIL SLUDGE REMOVAL CRAFT (YB)

• 1 YB 01-class lighter (L: 31-3-75)

YB 01



YB 01

Ships of the World

D: 177 tons S: 9 kts Dim: 27.5 × 5.2 × 1.9
 M: 1 diesel; 230 hp Cargo: 100 dwt

◆ 4 YB 101-class barges (In serv. 1975-76)

YB 101-104

D: 100 dwt Dim: 17.0 × 5.2 × 2.0 M: Non-self-propelled

SELF-PROPELLED FLOATING CRANES (YC)

♦ 1 YC 09 class

YC 09 (In serv. 25-2-74)

D: 260 tons S: 6 kts Dim: 26.0 × 14.0 × 0.9 M: 2 diesels; 2 props; 280 hp

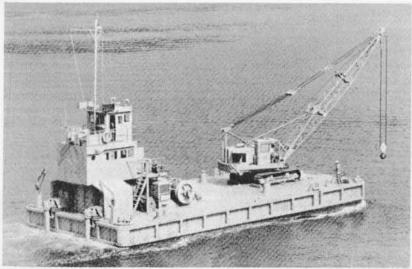
♦ 3 YC 06 class

YC 06 (In serv. 31-3-69) YC 07 (In serv. 28-2-70) YC 08 (In serv. 29-3-72)

D: 150 tons **S:** 5 kts **Dim:** $24.0 \times 10.0 \times 0.8$ **M:** 2 diesels; 2 props; 240 hp Remarks: In service 1969-72.

1 YC 05 class

YC 05 (In serv. 27-3-67)



YC 05-pontoon hull, crawler crane

Ships of the World

D: 110 tons S: 5 kts Dim: 22.0 × 10.0 × 0.9 M: 2 diesels; 180 hp

DOCKYARD SERVICE CRAFT (YD)

YD 01, 02: 0.8 tons, 7.60×1.90 , rowboats in serv. 25-3-75; YD 03: 1.7 tons, same dimensions, in service 1978; YD 04: 0.5 tons, in serv. 25-12-79.

FIREBOAT (YE)

♦ 1 Shobo class Bldr: Azumo,

Bldr: Azumo, Yokosuka (In serv. 28-2-64)

YE 41 SHOBO 1 (ex-Kosuko 6)

D: 45 tons S: 19 kts Dim: 22.9 × 5.5 × 1.0 M: 3 diesels; 3 props; 1,300 hp

REMARKS: Employed as air/sea rescue boat and fireboat at Iwakuni Air Station for seaplanes. Three firefighting monitors. Re-engined 1977; originally made 30 kts on 2.800 hp.

COMMUNICATIONS BOATS (YF)

• 68 miscellaneous service boats

YF 1029 YF 1030 (Both in serv. 1982)

D: 11 tons S: 18 kts Dim: 13.5 (12.3 pp) × 3.8 × 0.7
 M: 2 Type 6BDITC-MRD diesels; 2 props; 360 hp

YF 1022 through YF 1028 (In serv. 1980)

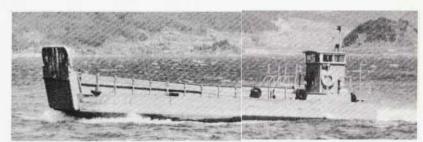
D: 9 tons (11 fl) S: 14 kts Dim: 13.00 × 3.80 × 0.60

M: 2 Type E 120 T-MF6RE diesels; 2 props 280 hp Cargo: 73 passengers

Others in service are

| | Tons | Dim: | S(kts): | Hp. |
|-----------------------------|------|------------------------------|---------|-----|
| YF 1021 | 11 | $13.0 \times 3.6 \times 0.6$ | 14 | 350 |
| YF 2097-2101, 2103-2106, | 11 | $17.0\times4.2\times0.8$ | 10 | 450 |
| 2108, 2109 | | | | |
| YF 2060-2062 | 11 | $15.0 \times 3.6 \times 0.6$ | 10 | 160 |
| YF 2066-2074, | 8 | $10.5 \times 3.2 \times 0.6$ | 9 | 180 |
| 2078-2081, | | | | |
| 2083-2087, | | | | |
| 2091, 2096, | | | | |
| 2110, 2116 | | | | |
| YF 2075 | 22 | $17.0 \times 3.7 \times 0.7$ | 10 | 400 |
| YF 2076, 2077 | 0.8 | $7.0 \times 2.2 \times 0.3$ | 8 | 22 |
| YF 2082 | 5 | $11.0 \times 3.2 \times 0.6$ | 9 | 90 |
| YF 2088-2090, | 5.9 | $11.0 \times 3.2 \times 0.6$ | 10 | 135 |
| 2092, 2095, | | | | |
| 2111-2115, | | | | |
| 2117-2119, | | | | |
| 2122 | | | | - |
| YF 2120 | 12.6 | $15.0 \times 3.6 \times 0.7$ | 10 | 230 |
| YF 2121 | 33 | $17.0 \times 4.3 \times 0.7$ | 10 | 480 |

Remarks: YF 2097 series and YF 2075 designs are essentially U.S. LCM (6) landing craft adapted as utility craft. YF 2066 series are of the U.S. LCVP design. Smaller units are of wooden or glass-reinforced plastic construction.



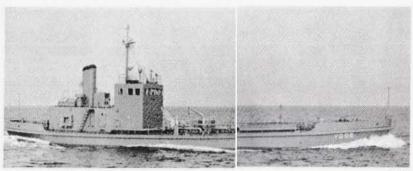
YF 2108 — U.S. LCM(6) type

Ships of the World

JET ENGINE FUEL CRAFT (YG)

♦ 2 YG 07-class lighters

YG 201 (ex-YG 07; In serv. 30-3-73) YG 202 (ex-YO 20, ex-YG 08; In serv. 29-3-77)



YG 202 (as YG 08)

JET ENGINE FUEL CRAFT (YG) (continued)

D: 270 dwt S: 10 kts Dim: 36.7 × 6.8 × 2.6

M: 1 diesel; 1 prop; 350 hp

Remarks: YG 08 reclassified YO 20 in 1979, then again reclassified YG 202 in 1981.

CARGO CRAFT (YL)

• 2 YL 09-class lighters

| | Laid down | L | In serv. |
|-------|-----------|----------|----------|
| YL 09 | 24-11-79 | 3-3-80 | 28-3-80 |
| YL 10 | | 17-12-82 | 28-2-83 |



YL 09

Ships of the World, 1980

D: 126 tons (fl) S: 9-10 kts Dim: 27.00 × 7.00 × 1.04
 M: 2 Type E 120 T-MF6 RE diesels; 2 props; 560 hp Man: 5 tot.

Remarks: 50 dwt. Resemble a U.S. LCM(8) and have a bow ramp, two 2-ton stores cranes.

• 1 YL 08-class lighter

YL 08 (In serv. 10-3-67)

D: 50 dwt S: 8 kts Dim: 22.40 × 5.10 × 1.20 M: 1 diesel; 1 prop; 180 hp

♦ 4 YL 02-class lighters

YL 03 (In serv. 31-5-54) YL 06 (In serv. 30-11-54) YL 04 (In serv. 31-5-54) YL 07 (In serv. 30-11-54)

D: 50 dwt **S:** 8 kts **Dim:** 20.00 × 5.10 × 1.20 **M:** 1 diesel; 1 prop; 100 hp

• 1 YL 01-class lighter

YL 01 (In serv. 30-5-53)

D: 50 dwt S: 7 kts Dim: 20.00 × 5.50 × 1.20

M: 1 diesel; 1 prop; 90 hp

1 YL 119-class barge

YL 119 (In serv. 20-3-71)

D: 200 dwt Dim: 34.00 × 13.00 × 1.00

• 3 YL 116-class barges

YL 116 (In serv. 21-12-63) YL 117 (In serv. 25-2-64) YL 118 (In serv. 31-3-66)

D: 100 dwt Dim: 21.50 × 8.40 × 1.00

♦ 2 YL 114-class barges

YL 114 (In serv. 20-2-63) YL 115 (In serv. 12-3-63)

D: 80 dwt Dim: 18.40 × 7.40 × 0.90

FUEL LIGHTERS (YO)

Note: YO is now applied to all fuel carriers except jet fuel carriers, which are typed YG.

◆ 4 (+1) YO 21 class Bldr: Yoshiura Shipbuilding

| | Laid down | L | In serv. |
|-------|-----------|---------|----------|
| YO 21 | | 15-3-80 | 31-3-80 |
| YO 22 | 11-11-80 | 26-2-81 | 28-2-81 |
| YO 23 | 26-11-82 | 12-3-83 | 31-3-83 |
| YO 24 | 4-11-83 | 20-1-84 | 29-2-84 |
| VO 25 | | | |

D: 490 tons (694 fl) S: 10 kts Dim: 45.5 × 7.8 × 2.9 M: 2 Yanmar 6 MA diesels; 2 props; 460 hp Cargo: 520m³

• 1 YO 19-class former diesel fuel lighter

YO 19 (ex-YG 06; in serv. 20-6-63)

D: 270 dwt S: 9 kts Dim: 34.4 × 6.8 × 2.8 M: 2 diesels; 2 props; 330 hp REMARKS: Reclassified under FY 1979-80. YO 290 (ex-YG 08) reclassified YG 202 in 1981.



YO 24

Ships of the World, 2-84

• 3 YO 15-class former diesel fuel lighters

| | In serv. |
|------------------|----------|
| YO 15 (ex-YG 01) | 20-5-53 |
| YO 16 (ex-YG 02) | 15-10-53 |
| YO 18 (ex YG 04) | 10-1-55 |

D: 100 dwt S: 8 kts Dim: 23.0 × 5.0 × 2.0 M: 1 diesel; 1 prop; 90 hp REMARKS: Reclassified 1979-80. Sister YO 17 (ex-YG 03) stricken 30-3-84.

• 1 YO 14-class lighter

YO 14 (In serv. 31-3-76)

D: 490 dwt. **S:** 9 kts **Dim:** $45.0 \times 7.8 \times 2.9$ **M:** 2 diesels; 2 props; 460 hp REMARKS: Very similar to YO 21; officially considered same class.

• 4 YO 10-class lighters

YO 10 (In serv. 31-3-65) YO 11 (In serv. 14-3-66) YO 13 (In serv. 31-3-67)

D: 290 dwt S: 9 kts Dim: 36.5 × 6.8 × 2.6 M: 2 diesels; 2 props; 360 hp

• 3 YO 07-class lighters

YO 07 (In serv. 28-2-63) YO 08 (In serv. 29-2-64) YO 09 (In serv. 15-3-65)

D: 490 dwt S: 9 kts Dim: 43.9 × 7.8 × 3.1 M: 2 diesels; 400 hp

• 4 YO 03-class lighters

YO 03 (In serv. 15-4-55) YO 05 (In serv. 15-3-56) YO 04 (In serv. 15-4-55) YO 06 (In serv. 15-3-56) D: 300 dwt S: 7 kts Dim: 33.0 × 7.0 × 2.6

M: 2 diesels; 150 hp

♦ 1 YO 107-class barge

YO 108 (In serv. 15-3-54)

D: 100 dwt Dim: 17.00 × 5.20 × 2.20

♦ 1 YO 106-class barge

YO 106 (In serv. 20-5-53)

D: 250 dwt Dim: 23.00 × 7.00 × 2.50

DEBRIS CLEARANCE CRAFT (YS)

◆ 1 catamaran "sweeper boat"

YS 01 (In serv. 30-3-79)



YS 01

Ships of the World

D: 80 tons **S:** 9 kts **Dim:** 22.0 × 7.80 × 1.40 **M:** 2 diesels; 2 props; 460 hp **Man:** 6 tot.

Remarks: Stationed at Iwakuni Air Station seaplane base; used to clear floating debris in seaplane landing lanes and as a marker-buoy tender.

TUGS (YT)

• 6 (+1) YT 58-class large harbor tugs Bldr: Yokohama Yacht

YT 58 (In serv. 31-10-78) YT 63 (In serv. 27-9-82) YT 64 (In serv. 30-9-83) YT 67 (In serv. 9-86)



YT 64

Ships of the World, 9-83

D: 262 tons S: 11 kts Dim: 28.40 × 8.60 × 2.50

M: 2 Niigata 6L25B diesels; 2 pivoting Korl-nozzle props; 1,800 hp

Remarks: YT 66, in 1984 Budget, ordered 17-12-84. YT 67 in 1985 Budget. Have two water cannon for firefighting.

♦ 4 YT 53-class large harbor tugs

YT 53 (In serv. 1974) YT 55 (In serv. 22-8-75) YT 57 (In serv. 22-8-77)



YT 57

1977

D: 195 tons (200 fl)
 S: 11 kts
 Dim: 25.70 × 7.00 × 2.30
 M: 2 Kubota M6D20BUCS diesels; 1 prop; 1,500 hp
 Man: 10 tot.

Note: The last former U.S. Navy LCM(6) landing craft used as a tug, YT 54 was stricken 30-3-84.

• 8 YT 35-class harbor tugs

YT 35 (In serv. 28-2-63) YT 41 (In serv. 31-3-66) YT 46 (In serv. 29-3-67) YT 37 (In serv. 31-3-65) YT 44 (In serv. 29-3-67) YT 48 (In serv. 31-3-68) YT 40 (In serv. 31-3-66) YT 45 (In serv. 30-3-67)



YT 35

Ships of the World, 1979

D: 100 tons S: 10 kts Dim: 23.80 × 5.40 × 1.80 M: 2 diesels; 2 props; 400 hp

♦ 3 YT 60-class harbor pusher tugs Bldr: Yokohama Yacht

YT 60 (In serv. 31-3-80) YT 62 (In serv. 16-3-81)

YT 61 (In serv. 26-3-80)



YT 61

Ships of the World, 1980

D: 30 tons (37 fl)
 S: 8.6 kts
 Dim: 15.50 × 4.20 × 1.50 (0.97 hull)
 M: 2 Isuzu E 120-MF64A diesels; 2 cycloidal props; 380 hp

• 11 YT 34-class harbor pusher tugs

YT 34 (In serv. 20-3-63) YT 42 (In serv. 31-3-65) YT 51 (In serv. 28-2-72) YT 36 (In serv. 14-3-64) YT 43 (In serv. 29-3-66) YT 54 (In serv. 24-3-75) YT 38 (In serv. 31-3-65) YT 47 (In serv. 20-1-67) YT 59 (In serv. 16-1-79) YT 39 (In serv. 31-3-65) YT 49 (In serv. 5-3-68)

D: 28 tons (30 fl) S: 9 kts Dim: 14.50 × 4.00 × 1.00

M: 2 diesels; 2 props; 320 hp Man: 3 tot.

Remarks: Conventional tugs. Sisters YT 27 and 33 stricken 1979, and YT 32 during 1981. YT 59 displaces 30 tons std.

◆ 4 YT 25-class pusher tugs (In serv. . . .)

YT 25 YT 28 YT 29 YT 31

Remarks: Sister YT 30 discarded 30-6-84.

TRAINING TENDERS (YTE)

◆ 1 minesweeper construction experimental craft

Bldr: Hitachi, Kanegawa

 Laid down
 L
 In serv.

 YTE 12 Токіма
 1980
 12-1-82
 12-1-83

D: 110 tons light, 142 std. (180 fl) S: 14 kts Dim: 35.0 × 7.5 × 1.5

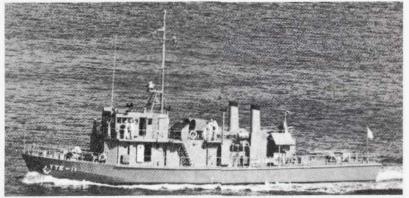
M: 2 diesels; 2 props; 1,100 hp Man: 18 tot.

REMARKS: Built to test glass-reinforced plastic construction techniques for building future mine countermeasures ships and for testing shock resistance and sound transmission properties. Lines based on former inshore minesweeper Atada; flush deck, no minesweeping gear as completed.

1 navigational training tender

Bldr: Ando Iron Works

YTE 11 (In serv. 31-3-73)



YTE 11

Ships of the World, 1979

D: 120 tons (170 fl) S: 13 kts Dim: 33.0 × 7.0 × 1.5 M: 2 Shinko-Zoki SG175/CM diesels; 2 props; 1,400 hp

Remarks: Based at Etajima Naval Academy to teach officer cadets ship handling and navigation. Can carry 25 cadets.

SEAPLANE BUOY TENDERS (YV)

♦ 3 YV 01 class

YV 01 (In serv. 30-3-68) YV 02 (In serv. 28-3-69) YV 03 (In serv. 20-3-70)



YV 01

Ships of the World

D: 45 tons S: 10 kts Dim: 20.0 × 4.40 × 1.00 M: 2 diesels; 2 props; 240 hp REMARKS: Maintain seaplane fairway marker buoys.

WATER LIGHTERS (YW)

♦ 5 YW 12 class

YW 12 (In serv. 14-3-64) YW 13 (In serv. 28-3-66) YW 15 (In serv. 20-3-67) YW 16 (In serv. 20-3-67)

YW 14 (In serv. 30-3-66)



Ships of the World 1979

D: 160 dwt S: 8 kts Dim: 30.5 × 5.7 × 2.2 M: 1 diesel; 180 hp

♦ 1 YW 11 class

YW 11 (In serv. 25-3-64)

D: 310 dwt S: 10 kts Dim: 36.7 × 6.8 × 2.8 M: 2 diesels; 2 props; 360 hp

♦ 1 YW 10 class

YW 10 (In serv. 20-3-63)

D: 100 dwt S: 8 kts Dim: 23.5 × 5.1 × 1.0 M: 1 diesel; 160 hp

♦ 7 YW 03 class

YW 03 (In serv. 22-3-54) YW 06 (In serv. 20-12-54) YW 09 (In serv. 20-12-54) YW 04 (In serv. 31-3-54) YW 07 (In serv. 11-12-54) YW 08 (In serv. 20-12-54) YW 05 (In serv. 20-12-54)

D: 150 dwt S: 8 kts Dim: 27.0 × 5.5 × 2.1 M: 1 diesel; 75 hp

♦ 1 YW 02 class

YW 02 (In serv. 20-5-53)

D: 150 dwt S: 9 kts Dim: 27.0 × 5.5 × 2.1 M: 1 diesel; 90 hp

MOTOR BOATS (B)

• 12 miscellaneous

B 4006; 8 tons — $13.00 \times 3.20 \times 0.50$ — 14 kts (In serv. 16-3-76)

B 4007-4013: 1 ton $-5.00 \times 2.10 \times 0.40 - 22$ kts (All in serv. 26-1-76) B 4014-4016: 8 tons $-13.00 \times 3.20 \times 0.50 - 14$ kts (In serv. 1978-80)

B 4017: 16 tons — $17.4 \times 3.9 \times 1.5$ — 10 kts (In serv. 28-3-85)

Remarks: Fiberglass-hulled. B 4016 capable of 18 kts. B 4006 basically the same as B 4014-4016. B 4017 replaced the wooden-hulled B 4005 (stricken 30-3-85) and has a glass-reinforced plastic hull with pilothouse offset to port; 180 hp.

ROWING CRAFT AND SAILBOATS

64 "C" group rowing boats: C 5094-5157

D: 1.5 tons **Dim:** $9.0 \times 2.5 \times ...$

39 "T" group rowing punts: T 6063-6102 (T 6058-6062 stricken '85, but T 6098-6102 added 26-2-85)

D: .5 tons Dim: $6.0 \times 1.6 \times \dots$

13 "Y" group sailboats: Y 7010-7022 (Y 7021, 22 added 26-2-85)

MARITIME SAFETY AGENCY

(Kaijo Hoancho)

Personnel (1984): 11,944 men (approx. 2,500 officers)

The Maritime Safety Agency, which was organized in 1948, recently underwent a massive expansion, which by 1982 made it the world's largest and best-equipped coast guard. In peacetime, it is directed by the Department of Transportation. Although most of its ships are armed, they are not considered part of the Navy; they fly only the national colors (a red disk on a white background), not the flag flown by naval ships. A stylized blue stripe has recently been added to the hull sides of larger units. In wartime, the ships would be under naval control.

AVIATION: In 1985, the MSA operated 21 fixed-wing aircraft (5 YS-11A transports, 2 SC-7 Skyvan, 13 Beech 200T light transports, and 1 Cessna SA 790/185C), and 26 helicopters (22 Kawasaki-Bell 212, 4 Bell 206B, and 2 Hughes 369-HS).

HIGH-ENDURANCE HELICOPTER-CARRYING CUTTERS (PLH)

♦ 0 (+2) new construction

Laid down Bldr In serv. PLH 21 Mizuho Mitsubishi, Shimonoseki 27-7-84 5-6-85 3-86 PLH 22 N. . .



Mizuho (PLH 21) at launch

Ships of the World, 6-85

D: 4,900 tons (5,300 fl) **S**: 23 kts **Dim**: 130.00 (123.00 wl) \times 15.50 \times 5.25 A: 1/35-mm Oerlikon AA — 1/20-mm JM-61-MB gatling AA — 2/Kawasaki-Bell 212 helicopters Electron Equipt: Radar: 3 navigational sets

M: 2 SEMT-Pielstick 14 PC 2.5V diesels; 2 CP props; 18,200 hp Range: . . . / . . . Electric: 1,875 kVA Man: 130 tot.

Remarks: Both ordered under the 1984 program. Design is a reduced version of a 5,900-std.-ton patrol and rescue ship intended for Indian Ocean service; the new ships will operate in the Pacific and are the first MSA units to carry two helicopters. Will have a flight deck traversing system. Have a bow-thruster.

HIGH-ENDURANCE CUTTERS (PL)

• 6 Tsugaru class

| | Bldr | Laid down | L | In serv. |
|----------------|------------------------|-----------|----------|----------|
| PL 02 Tsugaru | Ishikawa-Harima, Tokyo | 18-4-78 | 6-12-78 | 17-4-79 |
| PL 03 Oosumi | Mitsui, Tamano | 1-9-78 | 1-6-79 | 18-10-79 |
| PL 04 Uraga | Hitachi, Maizuru | 14-3-79 | 12-10-79 | 5-3-80 |
| PL 05 ZAŌ | Mitsubishi, Nagasaki | 23-10-80 | 29-10-81 | 19-3-82 |
| PL 06 CHIKUZEN | Kawasaki, Kobe | 20-4-82 | 18-3-83 | 28-9-83 |
| PL 07 Settsu | Sumitomo, Uraga | 5-4-83 | 21-4-84 | 27-9-84 |

D: 3.730 tons (4.037 fl) **S:** 22 kts **Dim:** 105.4 (100.0 wl) \times 14.6 \times 4.8

A: 1/40-mm AA - 1/20-mm AA (not in PL 03, 04) - PL 04, 05, 06: 1/35-mm AA-all: 1/Bell 212 helicopter

M: 2 Pielstick 12PC2-5V400 diesels; 2 CP props; 15,600 hp (13,260 hp sust.)

Electric: 1,450 kVA Fuel: 650 tons Range: 5,700/18 Man: 21 officers, 7 warrant officers, 28 men, 15 spare



Settsu (PL 07)

Ships of the World, 9-84

HIGH-ENDURANCE CUTTERS (PL) (continued)



Chikuzen (PL 06)

Ships of the World, 1984

Remarks: Have bow-thruster, 2 pair fin stabilizers, normal ship bow for operations in ice-free waters. Also have; Flume-type passive stabilization tanks in superstructure. Have 3 radars. Engines manufactured by different builders. PL 03, 04 built under 1978 program, PL 05 under 1979 program, PL 06 under 1981 program, and PL 07 under the 1983 program.

• 1 Soya class



Soya (PL 01)

Ships of the World, 5-85

In corv

D: 3,562 tons (4,089 fl) S: 21 kts Dim: $98.6 \times 15.6 \times 5.2$ A: 1/40-mm AA — 1/20-mm AA — 1/Bell 212 helicopter

M: 2 Nippon Kokan-Pielstick 12PC2-5V400 diesels; 2 CP props; 16,000 hp (13,260 hp sust.)

Electric: 1,450 kVA Fuel: 650 tons Range: 5,700/18 Man: 71 tot.

REMARKS: The Soya was built under the 1977 program. The Soya has an icebreaking bow and operates in the north. Passive tank stabilization only, no bow-thruster. Four radars (one aft for helo control).

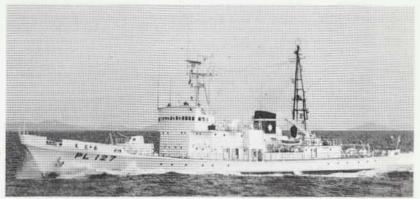
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• 28 Shiretoko class

| | Blar | La | in serv. |
|--------------------|------------------------------|---|----------|
| PL 101 SHIRETOKO* | Mitsui, Tamano | 13-7-78 | 8-11-78 |
| PL 102 Esan | Sumitomo, Oshima | 8-78 | 16-11-78 |
| PL 103 Wakasa* | Kawasaki, Kobe | 8-78 | 29-11-78 |
| PL 104 YAHIKO | Mitsubishi, Shimonoseki | 8-78 | 16-11-78 |
| PL 105 Мотови | Sasebo Dockyard | 8-78 | 29-11-78 |
| PL 106 RISHIRI | Shikoku DY | 27-3-79 | 12-9-79 |
| PL 107 Matsushima* | Tohoku DY | 11-4-79 | 14-9-79 |
| PL 108 IWAKI* | Naikai, Innoshima | 28-3-79 | 10-8-79 |
| PL 109 SHIKINE | Usuki SY, Usuki | 27-4-79 | 20-9-79 |
| PL 110 SURUGA* | Kurushima DY, Onishi | 20-4-79 | 28-9-79 |
| PL 111 REBUN* | Narasaki SY, Muroran | 6-79 | 21-11-79 |
| PL 112 CHOKAI* | Nipponkai Heavy Ind., Toyama | 6-79 | 30-11-79 |
| PL 113 ASHIZURI* | Sanoyasu DY, Oshima | 6-79 | 31-10-79 |
| PL 114 OKI | Tsuneishi SY, Numakuma | 6-79 | 16-11-79 |
| PL 115 Noto | Miho SY, Shimuzu | 7-79 | 30-11-79 |
| PL 116 YONAKUNI | Hiyashigane SY, Nagasaki | 6-79 | 31-10-79 |
| PL 117 Daisetsu* | Hakodate DY | 22-8-79 | 31-1-80 |
| PL 118 SHIMOKITA | Ishikawajima, Tokyo | 9-79 | 12-3-80 |
| PL 119 SUZUKA | Kanasashi SY, Toyohashi | 4-10-79 | 7-3-80 |
| PL 120 Kunasaki | Koyo DY, Mihara | 8-10-79 | 29-2-80 |
| PL 121 GENKAI* | Oshima SY, Oshima | 9-79 | 31-1-80 |
| PL 122 Goto* | Onomichi SY, Onomishi | 10-79 | 29-2-80 |
| PL 123 Koshiki | Kasado DY, Kasado | 9-79 | 25-1-80 |
| PL 124 HATERUMA* | Osaka DY | 11-79 | 12-3-80 |
| PL 125 KATORI | Tohoku DY, Shiogama | 5-80 | 17-10-80 |
| PL 126 KUNIGAMI | Kanda SY, Kawashiri | 28-3-80 | 21-10-80 |
| PL 127 Етомо* | Naikai, Innoshima | 30-9-81 | 17-3-82 |
| PL 128 Mashiyu | Shikoku DY, Kochi, Takamatsu | 14-10-81 | 12-3-82 |
| | | 100000000000000000000000000000000000000 | 1 72 |

D: 974 tons (1,350-1,360 fl) **S:** 20 kts **Dim:** 77.8 (73.6 pp) \times 9.6 \times 3.42

A: 1/40-mm AA — 1/20-mm AA — see Remarks



Etomo (PL 127)

Ships of the World, 1982



Shikine (PL 109)

L. & L. Van Ginderen, 5-84

M: 2 Niigata 8MA 40 or Fuji 8 S40B diesels; 2 CP props; 7,000 hp Electric: 625 kVA Fuel: 191 tons Range: 4,406/17 Man: 41 tot.

Remarks: Program helped small shipyards to stay in business. Intended to patrol the 200-nautical-mile economic zone. Starred units have Fuji 8 S40B diesels. PL 106 and later have no 20-mm AA, while PL 118, 122, 124-128 have an Oerlikon 35-mm in place of the 40-mm AA. Carry 153 tons water. Fuel capacities and endurances vary. Range greater for some: PL 127: 5,200/17. PL 120 had a serious fire 15-2-82.

• 2 Izu clas

| | Bldr | L | In serv. |
|-------------|---------------------|-------|----------|
| PL 31 Izu | Hitachi, Mukaishima | 1-67 | 31-7-67 |
| PL 32 MIURA | Maizuru DY | 11-68 | 15-3-69 |



Izu (PL 31)

Ships of the World, 1984

D: 2,081 tons (2,200 fl) S: 24.6 kts Dim: 95.5 (86.45 pp) × 11.6 × 3.8 A: 1/76.2-mm DP M: 2 SEMT-Pielstick 12PC2V diesels; 2 CP props; 10,400 hp Electric: 800 kVA Range: 5,000/20.5; 14,500/12.7 Man: 72 tot.

Remarks: Large weather radar in dome aft removed in 1978 and gun added forward.

• 4 Erimo class

| | Bldr | L | In serv. |
|---------------|---------------------|---------|----------|
| PL 13 ERIMO | Hitachi, Mukaishima | 14-8-65 | 30-11-65 |
| PL 14 SATSUMA | Hitachi, Mukaishima | 4-66 | 30-7-66 |
| PL 15 DAIO | Hitachi, Maizuru | 19-6-73 | 28-9-73 |
| PL 16 MUROTO | Naikai, Taguma | 5-8-74 | 30-11-74 |

D: 980 tons (1,009 ft) **S:** 19.5 kts **Dim:** 76.6 (73.0 pp) × 9.2 × 3.0

A: 1/76.2-mm Mk 26 DP — 1/20-mm AA

M: 2 Burmeister & Wain 635V 2 BU 45 diesels; 2 props; 4,800 hp Electric: 320 kVA Range: 5,000/18 Man: 72 tot.

Remarks: The hull of PL 13 is reinforced against ice. PL 15 and PL 16: **D**: 1,206 tons; **Dim**: beam 9.6, draft, 3.18; **A**: 1/40-mm AA — 1/20-mm AA; **M**: 7,000 hp for 20.4 kts; **Electric**: 500 kVA; **Range**: 6,600/18; **Man**: 50 tot.

HIGH-ENDURANCE CUTTERS (PL) (continued)

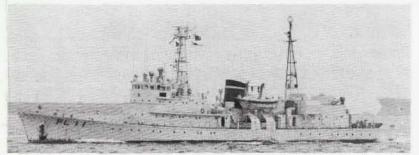


Daio (PL 15)

Ships of the World, 1985

• 2 Nojima class Bldr: Uraga Dock Co., Ltd.

L In serv.
PL 11 Nojima 12-2-62 30-4-62
PL 12 Ojika . . . 10-6-63



Nojima (PL 11)

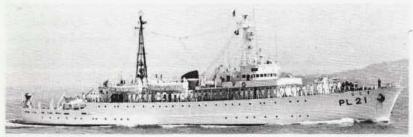
L. & L. Van Ginderen, 1-83

D: 980 tons (1,009 fl)
 S: 18.1 kts
 Dim: 69.0 × 9.18 × 3.2
 M: 2 Uraga-Sulzer 6 MD 42 diesels; 2 props; 3,000 hp
 Electric: 310 kVA
 Range: 6,000/16.5
 Man: 73 tot.

Remarks: Used for meteorological reporting. Passive tank stabilization.

♦ 1 Kojima-class training cutter

Bldr In serv.
PL 21 KOJIMA Kure DY 21-5-64



Kojima (PL 21)

L. & L. Van Ginderen, 6-82

D: 1,066 tons (1,206 fl) S: 17.3 kts Dim: 69.6 × 10.3 × 3.53 A: 1/76.2-mm DP Mk 26 - 1/40-mm AA - 1/20-mm AA

M: 1 Uraga-Sulzer 7 MD 51 diesel; 1 prop; 2,600 hp Electric: 550 kVA Range: 6,120/13 Man: 17 officers, 42 crew, 47 cadets

REMARKS: Used as a training ship at Kure Academy.

MEDIUM-ENDURANCE CUTTERS (PM)

♦ 11 (+2) Teshio (500-ton) class

| | Bldr | L | In serv. |
|---------------|---------------------------|----------|----------|
| PM 01 Teshio | Shikoku DY, Kochi | 30-5-80 | 30-9-80 |
| PM 02 OIRASE | Naikai, Takuma, Innoshima | 15-5-80 | 29-8-80 |
| PM 03 ECHIZEN | Usuki Iron Wks., Usuki | 2-6-80 | 30-9-80 |
| РМ 04 Токасні | Narazaki, Muroran | 21-11-80 | 24-3-81 |
| PM 05 HITACHI | Tohoku SY, Shiogoma | 15-11-80 | 19-3-81 |
| PM 06 OKITSU | Usuki Iron Wks. | 5-12-80 | 17-3-81 |
| PM 07 Isazu | Naikai, Taguma | 29-10-81 | 18-2-82 |
| PM 08 CHITOSE | Shikoku DY, Kochi | 7-7-81 | 17-11-82 |
| PM 09 Kumano | Naikai, Taguma, Innoshima | 8-81 | 10-3-83 |
| PM 10 SORACHI | Tohoku SY, Shiogama | 27-4-84 | 27-9-84 |
| PM 11 N | | 20-8-85 | 11-85 |
| PM 12 N | | | |
| PM 13 N | 3.212 | *** | 4.4.4 |
| | | | |

D: 630 tons (670 fl)
 S: 18 kts
 Dim: 67.80 (63.00 pp) × 7.90 × 2.65
 A: 1/20-mm JN-61B gatling AA
 Electron Equipt: Radar: 2/JMA-159B
 M: 2 Fuji 6S 32F diesels; 2 props; 3,000 hp
 Electric: 240 kVA

Endurance: 15 days Range: 3,200/16 Man: 33 tot.



Sorachi (PM 10)

Ships of the World, 9-84



Oirase (PM 02)

L. & L. Van Ginderen, 5-84

Remarks: 540 grt. Three built under 1979-80 program, three under 1980-81 program, one under 1981, 1983, and 1984 programs. Some have Arakata 6 M31 EX diesels. PM 07 also used for training and has a lengthened after deckhouse. PM 12 and 13 approved in 1985 Budget.

• 2 Takatori (350-ton) class

 Bldr
 L
 In serv.

 PM 89 Takatori
 Naikai, Takuma, Innoshima
 8-12-77
 24-3-78

 PM 94 Kumano
 Naikai, Takuma, Innoshima
 2-11-78
 23-2-79



Kumano (PM 94)

L. & L. Van Ginderen, 5-84

D: 634 tons normal S: 15.7 kts Dim: 45.70 (44.25 pp) × 9.20 × 3.88 A: None M: 2 Niigata 6M31EX diesels; 1 CP prop; 3,000 hp Electric: 200 kVA Range: 750/15 Man: 34 tot.

Remarks: 469 grt. Rescue-tug types. Equipped for fire-fighting and salvage duties. Two water cannon (3,000 1./min. each). Carry an 8-m. rescue boat and a 4.6-m. speedboat.

• 20 Bihoro (350-ton) class

| + 20 Dinoro (5500- | ton) class | |
|--------------------|------------------------|----------|
| | Bldr | In serv. |
| РМ 73 Віноко | Tohoku SY, Shiogama | 28-2-74 |
| PM 74 Kuma | Usuki Iron Wks., Usuki | 28-2-74 |
| PM 75 Fuji | Usuki Iron Wks., Usuki | 7-2-75 |
| PM 76 Kabashima | Usuki Iron Wks., Usuki | 25-3-75 |
| PM 77 SADO | Tohoku SY, Shiogama | 1-2-75 |
| PM 78 Ishikari | Tohoku SY, Shiogama | 13-3-76 |
| PM 79 ABAKUMA | Tohoku SY, Shiogama | 30-1-76 |
| PM 80 Isuzu | Nakai, Taguma | 10-3-76 |
| РМ 81 Кікисні | Usuki Iron Wks., Usuki | 6-2-76 |
| PM 82 Kuzuryu | Usuki Iron Wks., Usuki | 18-3-76 |
| PM 83 Horobetsu | Tohoku SY, Shiogama | 21-1-77 |
| PM 84 SHIRAKAMI | Tohoku SY, Shiogama | 3-3-77 |
| PM 85 SAGAMI | Naikai SY, Takuma | 30-11-76 |
| PM 86 TONE | Usuki Iron Wks., Usuki | 30-11-76 |
| PM 87 Yoshino | Usuki Iron Wks., Usuki | 28-1-77 |
| PM 88 Kurobe | Shikoku DY, Kochi | 15-2-77 |
| | | |

MEDIUM-ENDURANCE CUTTER (PM) (continued)

| | Bldr | In serv. |
|----------------|------------------------|----------|
| РМ 90 Снікисо | Nakai, Taguma | 27-1-78 |
| PM 91 YAMAKUNI | Usuki Iron Wks., Usuki | 26-1-78 |
| PM 92 KATSURA | Shikoku DY, Kochi | 15-2-78 |
| PM 93 SHINANO | Tohoku SY, Shiogama | 23-2-78 |



Sado (PM 77)

1978



Kuma (PM 74)

Ships of the World, 1984

D: 636 tons (657 fl) S: 18 kts Dim: 63.35 × 7.80 × 2.53 A: 1/20-mm AA Electron Equipt: Radar: 2 JMA-159B

M: 2 Niigata 6M31EX diesels; 2 CP props; 3,000 hp Electric: 200 kVA Range: 3,260/16 Man: 34 tot.

• 7 Kunashiri (350-ton) class

| | Bldr | In serv. |
|-----------------|------------------------|----------|
| PM 65 Kunashiri | Maizuru DY | 28-3-69 |
| PM 66 MINABE | Maizuru DY | 28-3-70 |
| PM 67 SAROBETSU | Maizuru DY | 30-3-71 |
| PM 68 KAMISHIMA | Usuki Iron Wks., Usuki | 31-1-72 |
| PM 70 MIYAKE | Tohoku SY, Shiogama | 25-1-73 |
| PM 71 Awaji | Usuki Iron Wks., Usuki | 25-1-73 |
| PM 72 YAEYAMA | Usuki Iron Wks., Usuki | 20-12-72 |



Yaeyama (PM 72)

Ships of the World, 1984

D: 498 tons (574 fl) S: 17.5 kts Dim: 58.04 × 7.38 × 2.40 A: 1/20-mm AA M: 2 Niigata 6MF32H diesels; 2 props; 2,600 hp Electric: 120 kVA Range: 3,040/16 Man: 40 tot.

Remarks: PM 70 to PM 72 have 6M31EX diesels, 3,000 hp. PM 72 has controllable-pitch propellers.

• 5 Matsuura (350-ton) class Bldrs: PM 60, PM 61: Osaka SB; Others: Hitachi SY, Mukaishima

| | In serv. | | In serv. |
|----------------|----------|---------------|----------|
| PM 60 MATSUURA | 18-3-61 | PM 63 NATORI | 20-1-66 |
| PM 61 SENDAI | 14-4-62 | PM 64 KARATSU | 29-3-67 |
| PM 62 AMAMI | 29-3-65 | | |

D: 425 tons S: 16.5 kts (PM 64: 18 kts; PM 63: 16.8 kts)

Dim: $55.33 \times 7.00 \times 2.30$ A: 1/20-mm AA

M: 2 Ikegai 6MSB31S diesels; 2 props; 1,400 hp (PM 63: 2 Type 6MSB31HS diesels; 1,800 hp—PM 64: 2 Type 6MA31X diesels; 2,600 hp)

Electric: 140 kVA Range: 3,500/12-13 Man: 37-40 tot.



Matsuura (PM 60)

L. & L. Van Ginderen, 1981

• 2 Yahagi (350-ton) class

| | Bldrs | In serv. |
|---------------|-----------------|----------|
| PM 59 HORONAI | Niigata SY | 11-2-61 |
| PM 69 OKINAWA | Usuki Iron Wks. | 8-10-69 |

D: 376 tons (430 fl)
 S: 15.5 kts
 Dim: 50.27 × 7.36 × 2.16
 A: 1/20-mm AA
 M: 2 Ikegai 6 MSB31S diesels; 2 props; 1,400 hp
 Electric: 140 kVA
 Range: 4,350/12
 Man: 44 tot.

Remarks: PM 69 was originally built for Okinawa, transferred to MSA in 1972. Sisters Yahagi (PM 54) was stricken 18-1-82, Sumida (PM 55) and Chitose (PM 56) later in 1982, Sorachi (PM 57) on 2-8-84, and Yubari (PM 58) in 1985.

PATROL BOATS (PS)

* 2 Akagi (130-ton) class

| | Bldr | Laid down | L | In serv. |
|----------------|-------------------|-----------|----------|----------|
| PS 101 AKAGI | Sumidigawa, Tokyo | 31-7-79 | 5-12-79 | 26-3-80 |
| PS 102 TSUKUBA | Sumidigawa, Tokyo | 7-7-81 | 29-10-81 | 24-2-82 |



Tsukuba (PS 102)

L. & L. Van Ginderen, 5-83

D: 127.7 tons normal S: 26.5 kts Dim: 35.0 (33.0 wl) × 6.3 × 1.3 A: 1/12.7-mm mg M: 2 Pielstick 16PA 4V-185 diesels; 2 props; 4,400 hp Electric: 40 kVA Range: 570/20 Man: 12 tot.

Remarks: PS 101 in 1979 Budget, PS 102 in 1981. Glass-reinforced plastic hull; 4-day endurance. Carry a 25-man rubber rescue dinghy.

• 3 Bizan (130-ton) class

| | Bldr | In serv. |
|-----------------|-------------------------|----------|
| PS 42 BIZAN | Mitsubishi, Shimonoseki | 28-3-66 |
| PS 47 ASAMA | Mitsubishi, Shimonoseki | 31-1-69 |
| PS 48 SHIRAMINE | Mitsubishi, Shimonoseki | 15-12-69 |



Shiramine (PS 48)

Ships of the World, 1984

PATROL BOATS (PS) (continued)

D: 42-48 tons (83-85 fl) S: 21.6 kts (PS 48: 25 kts) Dim: 26.0 × 5.6 × 1.0 A: 1/12.7-mm mg

M: 2 Mitsubishi 12 HD 2 OMTK diesels; 2 props; 1,140 hp (PS 48: 2 MTU diesels; 2,200 hp) Electric: 2 kw Range: 400/18; PS 48: 250/25 Man: 14 tot.

♦ 14 Hidaka (130-ton) class

| | Bldr | In serv. |
|-----------------|-----------------------------|----------|
| PS 32 HIDAKA | Azuma SY, Yokosuka | 23-4-62 |
| PS 33 HIYAMA | Hitachi SY, Mukaishima | 13-3-63 |
| PS 34 Tsurugi | Hitachi, SY, Mukaishima | 13-3-63 |
| PS 35 Rokko | Shikoku DY, Shimonoseki | 31-1-64 |
| PS 36 TAKANAWA | Hayashigane SY, Shimonoseki | 27-1-64 |
| PS 37 AKIYOSHI | Hashihama SY, Imabaki | 29-2-64 |
| PS 38 KUNIMI | Hayashigane SY, Shimonoseki | 15-2-65 |
| PS 39 TAKATSUKI | Kurashima DY, Onishi | 30-3-65 |
| PS 41 KAMUI | Hayashigame SY, Shimonoseki | 15-2-66 |
| PS 43 ASHITAKA | Usuki Iron Wks., Usuki | 10-2-67 |
| PS 44 KURAMA | Usuki Iron Wks., Usuki | 28-2-67 |
| PS 45 IBUKI | Usuki Iron Wks., Usuki | 5-3-68 |
| PS 46 Toumi | Usuki Iron Wks., Usuki | 20-2-68 |
| PS 49 Nobaru | Hitachi SY, Mukaishima | 10-12-68 |



Kurama (PS 44)

Ships of the World, 1984

D: 169 tons normal S: 13.7 kts Dim: 31.72 (30.5 wl) × 6.29 × 1.80

A: 1/12.7-mm mg (usually not mounted)

M: 16MSB 31S diesel; 1 prop; 700 hp Electric: 60 kVA

Range: 1,100/12 Man: 17 tot.

Remarks: PS 44 replaced in training role by Isazu (PM 07) on 20-4-82.

COASTAL PATROL BOATS (PC)

◆ 23 Murakomo (30-meter) class

| | Bldr | In serv. |
|--|---|----------|
| PC 201 Murakomo | Mitsubishi, Shimonoseki | 24-3-78 |
| PC 202 KITAGUMO | Hitachi, Kanagawa | 17-3-78 |
| PC 203 YUKIGUMO | Hitachi, Kanagawa | 27-9-78 |
| PC 204 ASAGUMO | Mitsubishi, Shimonoseki | 21-9-78 |
| PC 205 HAYAGUMO | Mitsubishi, Shimonoseki | 30-1-79 |
| PC 206 AKIGUMO | Hitachi, Kanagawa | 28-2-79 |
| PC 207 YAEGUMO | Mitsubishi, Shimonoseki | 16-3-79 |
| PC 208 Natsugumo | Hitachi, Kanagawa | 22-3-79 |
| PC 209 Yamagiri | Hitachi, Kanagawa | 29-6-79 |
| PC 210 KAWAGIRI | Hitachi, Kanagawa | 27-7-79 |
| PC 211 TERUZUKI | Maizuru Heavy Ind. | 26-6-79 |
| PC 212 Natsuzuki | Maizuru Heavy Ind. | 26-7-79 |
| PC 213 MIYAZUKI | Hitachi, Kanagawa | 13-3-80 |
| PC 214 Nілівимо | Mitsubishi, Shimonoseki | 29-1-81 |
| PC 215 Tatsugumo | Mitsubishi, Shimonoseki | 19-3-81 |
| PC 216 Hamayuki | Hitachi, Kanagawa | 27-2-81 |
| PC 217 ISONAMI | Mitsubishi, Shimonoseki | 19-3-81 |
| PC 218 NAGOZUKI | Hitachi, Kanagawa | 29-1-81 |
| PC 219 YAEZUKI | Hitachi, Kanagawa | 19-3-81 |
| PC 220 Yamayuki | Hitachi, Kanagawa | 16-2-82 |
| PC 221 Komayuki | Mitsubishi, Shimonoseki | 10-2-82 |
| PC 222 Asagiri | Mitsubishi, Shimonoseki | 17-2-82 |
| PC 223 Umigiri | Hitachi, Kanagawa | 23-2-83 |
| The second secon | THE RESIDENCE OF THE PROPERTY | |

D: 88 tons (125 fl) S: 31 kts Dim: 31.0 (28.5 pp) × 6.3 × 1.17 A: 1/12.7-mm mg M: 2 Ikegai MTU 16V652 TB81 diesels; 2 props; 4,800 hp Electric: 40 kVA Range: 350/28 Man: 11 tot.

REMARKS: PC 201 to PC 204 built under 1977-78 program. PC 205-208 under 1978-79, PC 209-212 under 1978-79 supplementary program, PC 213 under 1979-80 program, PC 214-219 under 1980-81 program, PC 220-221 under 1981-82.



Hamayuki

L. & L. Van Ginderen, 5-84

♦ 15 (+ . . .) Akizuki (23-meter) class cept PC 83-85: Hitachi, Kanagawa)

Bldr: Mitsubishi, Shimonoseki (ex-

| | In serv. | | In serv. |
|-----------------|----------|-----------------|----------|
| PC 64 AKIZUKI | 28-2-74 | PC 79 SHIMANAMI | 23-12-77 |
| PC 65 SHINONOME | 25-2-74 | PC 80 Yuzuki | 22-3-79 |
| PC 72 URAYUKI | 31-5-75 | PC 81 Hanayuki | 27-3-81 |
| PC 73 ISEYUKI | 31-7-75 | PC 82 Awagiri | 27-12-82 |
| PC 75 HATAYUKI | 19-3-75 | PC 83 SHIMAGIRI | 7-2-84 |
| PC 76 HATAGUMO | 21-2-76 | PC 84 Setogiri | 22-3-85 |
| PC 77 Hamazuki | 29-11-76 | PC 85 Hayagiri | 22-2-85 |
| PC 78 Isozuki | 18-3-77 | | |



Hayagiri (PC 85)

Ships of the World, 1985



Urayuki (PC 72)

L. & L. Van Ginderen, 6-84

D: 77 tons normal S: 22.1 kts Dim: 26.00 (23.00 pp) × 6.30 × 1.12

A: PC 85 only: 1/20-mm AA
M: 3 Mitsubishi 12 DM 20 MTK diesels; 3 props; 3,000 hp Electric: 40 kVA Range: 290/21.5 Man: 10 tot.

REMARKS: Superstructure on PC 83 and later differs (see photos); they also use the Mitsubishi 12V175RTC diesel of 1,000 hp.

↑ 1 Matsunami (23-meter) class

Bldr: Hitachi, Kanagawa

PC 53 Matsunami (In serv. 30-3-71)

COASTAL PATROL BOATS (PC) (continued)



Matsunami (PC 53)

Ships of the World, 1984

D: 59 tons normal S: 20.7 kts Dim: 24.96 × 6.0 × 1.33

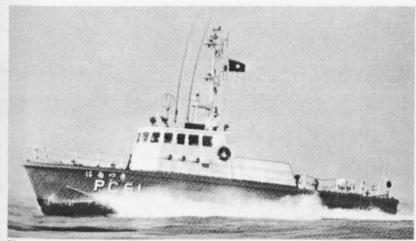
M: 2 Mercedes-Benz MB820Db diesels; 2 props; 2,200 hp; 2 DA640 cruise diesels; 180 hp

Electric: 3 kw Range: 270/18 Man: 30 tot.

Remarks: Especially configured for Emperor Hirohito for oceanographic research. Two cruise diesels can be geared to the props.

• 17 Shikinami (23-meter) class

| | Bldr | In serv. |
|-----------------|-------------------------|----------|
| PC 54 SHIKINAMI | Mitsubishi, Shimonoseki | 24-2-71 |
| PC 55 TOMONAMI | Mitsubishi, Shimonoseki | 20-3-71 |
| PC 56 WAKANAMI | Mitsubishi, Shimonoseki | 30-10-71 |
| PC 57 ISENAMI | Hitachi, Kanagawa | 29-2-72 |
| PC 58 TAKANAMI | Mitsubishi, Shimonoseki | 30-11-71 |
| PC 59 MUTSUKI | Hitachi, Kanagawa | 18-12-72 |
| PC 60 Mochizuki | Hitachi, Kanagawa | 18-12-72 |
| PC 61 HARUZUKI | Mitsubishi, Shimonoseki | 30-11-72 |
| PC 62 KIYOZUKI | Mitsubishi, Shimonoseki | 18-12-72 |
| PC 63 Urazuki | Mitsubishi, Shimonoseki | 30-1-73 |
| PC 66 Uranami | Hitachi, Kanagawa | 22-12-73 |
| PC 67 TAMANAMI | Mitsubishi, Shimonoseki | 25-12-73 |
| PC 68 MINEGUMO | Mitsubishi, Shimonoseki | 30-11-73 |
| PC 69 KIYONAMI | Mitsubishi, Shimonoseki | 30-10-73 |
| PC 70 OKINAMI | Hitachi, Kanagawa | 8-2-74 |
| PC 71 WAKAGUMO | Hitachi, Kanagawa | 25-3-74 |
| PC 74 Asoyuki | Hitachi, Kanagawa | 16-6-75 |



Haruzuki (PC 61)

Ships of the World, 1984

D: 46 tons normal S: 25.8 kts Dim: 21.0 × 5.3 × 1.22

A: 1/12.7-mm mg (usually not mounted)

M: 12 Mercedes-Benz MB820Db diesels; 2 props; 2,200 hp Electric: 2 kw Range: 240/23.8 Man: 10 tot.

• 1 Hamanami (23-meter) class

Bldr: Sumidagawa, Tokyo

PC 52 Hamanami (In serv. 22-3-71)

D: 60 tons (fi) S: 20.9 kts Dim: 21.0 × 5.1 × 1.22 M: 2 Mercedes-Benz MB820Db diesels; 2 props; 2,200 hp Electric: 2 kw Range: 290/20.9 Man: 10 tot.



Hamanami (PC 52)

Ships of the World, 1984

• 1 Hamagiri (23-meter) class

Bldr: Sumidagawa, Tokyo

PC 48 Hamagiri (In serv. 19-3-70)

D: 51 tons (fl) S: 14.6 kts Dim: 21.0 × 5.1 × 1.11 M: 2 Mitsubishi 12DH 20TK diesels; 2 props; 1,140 hp Electric: 2 kw Range: 270/12.9 Man: 10 tot.

Note: The 5 Umigiri-class patrol boats, Umigiri (PC 46), Asagiri (PC 47), Sagiri (PC 49), Setogiri (PC 50), and Hayagiri (PC 51) were stricken 1932-85.

PATROL CRAFT (CL)

• 63 Yamayuri (15-meter) class

| | Bldr | In serv. |
|--------------------|-----------------------|----------|
| CL 201 Yamayuri | Ishihara, Takasago | 27-1-78 |
| CL 202 TACHIBANA | Ishihara, Takasago | 24-2-78 |
| CL 203 Komakusa | Ishihara, Takasago | 30-1-79 |
| CL 204 Shiragiku | Ishihara, Takasago | 22-2-79 |
| CL 205 YAGURUMA | Sumidagawa, Tokyo | 31-7-79 |
| CL 206 Hamanasu | Sumidagawa, Tokyo | 29-9-79 |
| CL 207 SUZURAN | Sumidagawa, Tokyo | 31-7-79 |
| CL 208 Isogiku | Sumidagawa, Tokyo | 12-9-79 |
| CL 209 Isegiko | Sumidagawa, Tokyo | 31-8-79 |
| CL 210 AYAME | Yokohama Yacht | 29-10-79 |
| CL 211 AJISAI | Yokohama Yacht | 26-9-79 |
| CL 212 Himawari | Yokohama Yacht | 29-10-79 |
| CL 213 HAZAKURA | Yokohama Yacht | 29-8-79 |
| CL 214 HINAGIKU | Ishihara, Takasago | 9-7-79 |
| CL 215 Hamagiku | Yokohama Yacht | 19-9-79 |
| CL 216 FUYUME | Ishihara, Takasago | 30-7-79 |
| CL 217 TSUBAKI | Ishihara, Takasago | 10-8-79 |
| CL 218 SAZANKA | Ishihara, Takasago | 30-8-79 |
| CL 219 Aor | Sumidagawa, Tokyo | 31-10-79 |
| CL 220 Suisen | Yokohama Yacht | 29-10-79 |
| CL 221 Yaezakura | Ishihara, Takasago | 25-9-79 |
| CL 222 AKEBI | Ishihara, Takasago | 29-10-79 |
| CL 223 Shirahagi | Sumidagawa, Tokyo | 25-1-80 |
| CL 224 BENIBANA | Sumidagawa, Tokyo | 25-1-80 |
| CL 225 MURATSUBAKI | Ishihara, Takasago | 20-12-79 |
| CL 226 Tsutsuji | Sumidagawa, Tokyo | 22-2-80 |
| CL 227 ASHIBI | Ishihara, Takasago | 20-12-79 |
| CL 228 SATOZAKURA | Ishihara, Takasago | 26-2-80 |
| CL 229 Yukitsubaki | Ishihara, Takasago | 28-2-80 |
| CL 230 Satsuki | Shinki | 22-2-80 |
| CL 231 Ezogiku | Yokohama Yacht | 18-11-80 |
| CL 232 Akashio | Sumidagawa, Tokyo | 18-11-80 |
| CL 233 KOZAKURA | Yokohama Yacht | 18-11-80 |
| CL 234 SHIRAME | Ishihara, Takasago | 28-11-80 |
| CL 235 SARUBIA | Ishihara, Takasago | 28-11-80 |
| CL 236 SUIREN | Shinki SY, Osaka | 19-12-80 |
| CL 237 Hatsugiku | Ishihara, Takasago | 29-1-81 |
| CL 238 Hamayura | Ishihara, Takasago | 29-1-80 |
| CL 239 Airisu | Yokohama Yacht | 18-2-82 |
| CL 240 Yamabuki | Sumidagawa, Tokyo | 17-12-81 |
| CL 241 SHIRAYURI | Nobutaka | 1-2-82 |
| CL 242 Karatachi | Ishihara, Takasago | 17-12-81 |
| CL 243 Kobai | Ishihara, Takasago | 18-2-82 |
| CL 244 HAMAYOO | Ishihara, Takasago | 29-1-82 |
| CL 245 Sasayuri | Sumidagawa, Tokyo | 25-1-83 |
| CL 246 Kosumosu | Ishihara SY, Takasago | 17-2-83 |
| CL 247 Shiogiku | Sumidagawa, Tokyo | 29-11-82 |
| CL 248 Yamahagi | Yokohama Yacht | 29-11-82 |
| CL 249 MOKUREN | Shinki SY, Osaka | 25-1-83 |
| CL 250 Isobuji | Ishihara, Takasago | 7-3-83 |
| CL 251 Tamatsubaki | Sumidagawa, Tokyo | 26-1-84 |
| CL 252 Yodoki | Shinki SY, Osaka | 22-11-83 |
| | | |

PATROL CRAFT (CL) (continued)

| | Bldr | In serv. |
|--------------------|--------------------|------------|
| CL 253 Iozakura | Ishihara, Takasago | 25-11-83 |
| CL 254 HIMETSUBAKI | Ishihara, Takasago | 18-1-84 |
| CL 255 TOKIKUSA | Sumidagawa, Tokyo | 24-2-84 |
| CL 256 Mutsugiku | Sumidagawa, Tokyo | 15-11-84 |
| CL 257 TERUGIKO | Shiga, Sagai | 19-12-84 |
| CL 258 MAYAZAKURA | Ishihara, Takasago | 20-12-84 |
| CL 259 Yamagiko | Yokohama, Yacht | 22-1-85 |
| CL 260 TOBIUME | Ishihara, Takasago | 24-1-85 |
| CL 261 KOTOZAKURA | Sumidagawa, Tokyo | 28-2-85 |
| CL 262 MINOGIKU | Ishihara, Takasago | 14-2-85 |
| CL 263 Kuroyuri | Yokohama Yacht | * 15-11-84 |



Mokuren (CL 249)

Ships of the World, 1983

D: 27 tons normal (35.7 fl) S: 20.7 kts Dim: 18.00 (16.60 wl) × 4.30 × 0.82 (1.10 props)

M: 2 RD10T AO6 diesels; 2 props; 900 hp Range: 180/19 Man: 6 tot.

Remarks: Three water cannon for fire-fighting. CL 251-263 have waterjets, vice propellers, and can make 21.9 kts.; their engines are type S6A-MTK (450 hp each).

♦ 4 Nogekaze class Bldr: Sumidagawa, Tokyo

| | In serv. | | In serv |
|-----------------|----------|-----------------|---------|
| CL 99 NOGEKAZE | 10-72 | CL 107 ITOKAZE | 11-72 |
| CL 105 KUSUKAZE | 10-72 | CL 128 KAWAKAZE | 10-73 |



Itokaze (CL 107)

Ships of the World, 1984

D: 22.5 tons normal S: 16.6 kts Dim: $16.00 \times 4.10 \times 0.80$ (hull) M: 2 Type UDV816 diesels; 2 props; 500 hp Electric: 5 kVA Range: 160/14.7 Man: 6 tot.

• 95 Chiyokaze class

Bldrs: Ishihara, Nobotuka, Yokohama Yacht, Sumidagawa, 1968-76

| CL 44 CHIYOKAZE | CL 69 KASHIMA | CL 81 UMIKAZE |
|-----------------|-----------------|------------------|
| CL 50 SUZUKAZE | CL 70 Takekaze | CL 82 YUMEKAZE |
| CL 51 URAKAZE | CL 71 KINUKAZE | CL 83 Makikaze |
| CL 53 SUGIKAZE | CL 72 SHIGIKAZE | CL 84 HAKAZE |
| CL 54 FUJIKAZE | CL 73 Uzukaze | CL 85 Shachikaze |
| CL 55 MIYAKAZE | CL 74 AKIKAZE | CL 86 HIMEKAZE |
| CL 57 CHINUKAZE | CL 75 SETOKAZE | CL 87 Isekaze |
| CL 59 NACHIKAZE | CL 76 Kurekaze | CL 88 Komakaze |
| CL 65 Tomakaze | CL 77 MOJIKAZE | CL 89 KISHIKAZE |
| CL 66 HIBAKAZE | CL 78 SATAKAZE | CL 90 Mayakaze |
| CL 67 Yurikaze | CL 79 KIRIKAZE | CL 91 Kikukaze |
| CL 68 Sumikaze | CL 80 Kamikaze | CL 92 HIROKAZE |

| CL 93 KIBIKAZE | CL 117 Deigo | CL 138 Kushikaze |
|--------------------|------------------|-------------------|
| CL 94 ASHIKAZE | CL 118 YUUNA | CL 139 Hoshikaze |
| CL 95 OTOKAZE | CL 119 ADAN | CL 140 GETTO |
| CL 96 KURIKAZE | CL 120 HOROKAZE | CL 141 IWAKAZE |
| CL 97 IMAKAZE | CL 121 SOMAKAZE | CL 142 MATSUKAZE |
| CL 98 TERUKAZE | CL 122 HATSUKAZE | CL 143 OITSUKAZE |
| CL 100 Tokitsukaze | CL 123 Sasakaze | CL 144 Arakaze |
| CL 101 TSUKIKAZE | CL 124 HAGIKAZE | CL 145 TANIKAZE |
| CL 102 AWAKAZE | CL 125 TONEKAZE | CL 146 KOCHIKAZE |
| CL 104 MIOKAZE | CL 126 SHIZUKAZE | CL 147 OKIKAZE |
| CL 106 Kilkaze | CL 127 MUROKAZE | CL 148 SUWAKAZE |
| CL 108 TAMATSUKAZE | CL 129 Yamakaze | CL 149 SACHIKAZE |
| CL 109 MIYOKAZE | CL 130 HIKOKAZE | CL 150 Natsukaze |
| CL 110 AYAKAZE | CL 131 TAKAKAZE | CL 151 HARUKAZE |
| CL 111 MITSUKAZE | CL 132 Murakaze | CL 152 RINDŌ |
| CL 112 HATAKAZE | CL 133 Nomokaze | CL 153 SAWAKAZE |
| CL 113 NUMAKAZE | CL 134 Kumokaze | CL 154 KAIDŌ |
| CL 114 SOYOKAZE | CL 135 Yanakaze | CL 155 Nadeshiko |
| CL 115 MINEKAZE | CL 136 Yurakaze | CL 156 YAMAZAKURA |
| CL 116 OKITSUKAZE | CL 137 Washikaze | |



Yurikaze (CL 67)

L. & L. Van Ginderen, 5-84

D: 19.5 tons normal S: 18.4 kts Dim: 15.00 × 4.10 × 0.76 (hull) M: 2 Mitsubishi DH24MK diesels; 2 props; 500 hp Range: 180/16.1

Remarks: The *Nomakaze* (CL 103) was lost in 1978. CL 69 is named for her home port; CL 117 to CL 119 are home-ported in Okinawa.

Note: The 15 remaining craft of the Yakaze class, CL 42-64, were stricken 1983-85.

HYDROGRAPHIC SHIPS

◆ 1 Takuyo (2,600-ton) class Bldr: Nippon Kokan, Tsurumi

Laid down L In serv. HL 02 Takuyo 14-4-82 24-3-83 31-8-83



Takuyo (HL 02)

L. & L. Van Ginderen, 5-85

D: 2,979 tons (3,370 fl) S: 18.2 kts

Dim: 96.00 (90.00 wl) × 14.20 × 4.51 mean (4.91 max. over sonar)
 M: 2 Fuji 6S40B diesels; 2 CP props; 5,200 hp
 Electric: 965 kVA

Range: 12,800/16.9 Endurance: 50 days Man: 39 crew + 22 survey party

Remarks: 2,481 grt. In 1981 program to replace earlier unit with same name. Has bow-thruster, side-looking, contour mapping sonars, precision echo-sounders, etc. Carries two survey launches.

◆ 1 Shoyo (1,900-ton) class Bldr: Hitachi, Maizuru

HL 01 Shoyo (In serv. 26-2-72)

D: 2,200 tons normal **S:** 17.4 kts **Dim:** 81.70 (78.60 wl) \times 12.60 \times 4.20 **M:** 2 Fuji 12VM 32 H2F diesels; 1 prop; 4,800 hp **Electric:** 1,250 kVA **Range:** 12,000/14 **Man:** 73 tot.

HYDROGRAPHIC SHIPS (continued)



Shoyo (HL 01)

Ships of the World

REMARKS: 1,900 grt. Has bow-thruster.

Bldr: Nagoya SY ♦ 1 Meiyo class HL 03 Meiyo (In serv. 15-3-63)



Meiyo (HL 03)

D: 486 tons normal S: 12 kts Dim: 44.80 (40.50 pp) × 8.05 × 2.88 M: 1 Asakasa TR 655 diesel; 1 prop; 700 hp Electric: 140 kVA Range: 5,280/11 Man: 40 tot.

COASTAL HYDROGRAPHIC SHIPS

• 1 Kaivo class Bldr: Ishikawajima Harima, Nagoya HM 06 Kaiyo (In serv. 14-5-64)



Kaiyo (HM 06)

Ships of the World, 1984

D: 380 tons normal S: 12 kts Dim: 44.53 × 8.05 × 2.39 M: 1 Sumiyoshi Tekko S 6 NBS diesel; 1 prop; 450 hp Electric: 90 kVA Range: 3,160/10 Man: 31 tot.

 1 Tenyo class Bldr: Yokohama Yacht

HM 05 Tenyo (In serv. 31-3-61)



Tenyo (HM 05)

Ships of the World, 1984

D: 171 tons normal S: 10.5 kts Dim: 30.20 (28.00 pp) × 5.80 × 1.96 M: 1 Mitsui MDF5-26 diesel; 1 prop; 230 hp Electric: 40 kVA Range: 3,160/10.1 Man: 28 tot.

* 1 Heiyo class Bldr: Nippon Kokan, Shimizu

HM 04 HEIYO (In serv. 22-2-55)

D: 77 tons normal S: 10.6 kts Dim: 23.30 × 4.40 × 1.45 M: 1 Yanmar 6 MSL diesel; 1 prop; 150 hp Electric: 12 kw Range: 670/8.6 Man: 13 tot.

INSHORE HYDROGRAPHIC CRAFT

• 1 Kerama (15-meter) class Bldr: Ito Tekko SY, Sasebo HS 32 KERAMA (In serv. 28-11-73)

D: 23.2 tons normal S: 11 kts Dim: 15.0 × 4.0 × 0.86 M: 1 UDV 816 diesel; 250 hp Range: 450/10 Man: 7 tot.

Remarks: Glass-reinforced plastic construction.

• 4 Akashi (15-meter) class Bldrs: Various (In serv. 1973-77) HS 31 AKASHI HS 33 HAYATOMO HS 34 KURIHAMA HS 35 KURUSHIMA

D: 21 tons normal S: 10.2 kts Dim: 15.0 × 4.0 × 0.84

M: 1 Nissan-MTU UD626 diesel; 180 hp Range: 630/9.7 Man: 7 tot.

Remarks: Glass-reinforced plastic hull.

• 11 Hamashio class Bldr: Nippon Hikaki, Yokosuka (In serv. 1969-72)

HS 01 Hamashio HS 04 Uzushio HS 07 TAKASHIO HS 10 OYASHIO HS 05 HAYASHIO HS 08 Wakashio HS 02 ISESHIO HS 11 KUROSHIO **HS 09 YUKISHIO** HS 03 Setoshio HS 06 Isoshio



Hamashio (HS 01)

L. & L. Van Ginderen, 5-83

D: 6 tons normal S: 8.9-9.3 kts Dim: 10.15 × 2.65 × 0.81 M: 1 Nissan-MTU UD326 diesel; 90 hp Range: 343/8.5 Man: 7 tot.

Remarks: Glass-reinforced plastic construction. NAVIGATIONAL AID TENDERS

• 1 Tsushima class Bldr: Mitsui, Tamano

T. Laid down In serv. LL 01 TSUSHIMA 10-6-76 7-4-77 9-9-77



Tsushima (LL 01)

Ships of the World

D: 1,865 tons normal S: 16 kts (17.6 trials)

Dim: 75.00 (70.00 wl) × 12.50 × 4.15

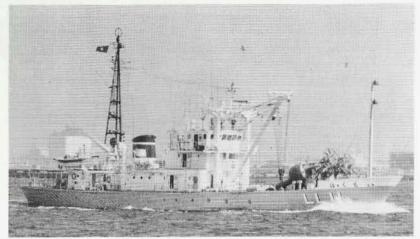
M: 1 Fuji-Sulzer 8S 40C diesel; 1 CP prop; 4,200 hp Fuel: 477 tons Range: 10,000/15 Man: 54 tot.

Remarks: Intended for use as a lighthouse supply ship. Has Flume-type passive stabilization tanks, bow-thruster.

NAVIGATIONAL AID TENDERS (continued)

• 3 Hokuto-class buoy tenders

| | Bldr | Laid down | L | In serv. |
|--------------|----------------|-----------|----------|----------|
| LL 11 HOKUTO | Sasebo DY | 19-10-78 | 20-3-79 | 29-6-79 |
| LL 12 KAIO | Sasebo DY | 17-7-79 | 20-10-79 | 11-3-80 |
| LL 13 GINGA | Kawasaki, Kobe | 13-6-79 | 16-11-79 | 18-3-80 |



Hokuto (LL 11)

L. & L. Van Ginderen, 1-83

D: 620 tons light (839 fl) S: 13.8 kts Dim: 55.00 (51.00 wl) × 10.60 × 2.65 M: 2 Asakasa MH23 (LL 11: Hanshin 6L 24SH) diesels; 2 props; 1,400 hp Electric: 300 kVA Fuel: 62 tons Range: 3,460/13 Man: 9 officers, 20 men, 2 technicians

♦ 1 (+3 + . . .) Zuiun (270-ton) class

| | Bldr | Laid down | L | In serv |
|--------------|------------------------|-----------|---------|---------|
| LM 101 ZUIUN | Usiki Iron Wks., Usiki | 19-1-83 | 27-4-83 | 27-7-83 |
| LM 102 N | 4 (6.4) | | | |
| LM 103 N | 4.4040 | | | |
| LM 104 N | * * * | | 4.4.4 | |



Zuiun (LM 101)

Ships of the World, 7-83

D: 370 tons normal (398 fl) S: 15.1 kts Dim: 46.00 (41.40 pp) × 7.50 × 2.23 M: 2 Mitsubishi-Akasaka MH 23-series diesels; 2 CP props; 1,300 hp Range: 1,440/14.5 Electric: 120 kw Fuel: 34 m³ Man: 20 tot.

Remarks: Lighthouse service vessels. Cargo: 85 tons. One diesel is model MH23F, other is MH23. Three additional units approved in 1985 Budget.

• 1 Miyojo-class buoy tender

Bldr: Ishikawajima, Tokyo

LM 11 Miyojo (In serv. 25-3-74)



Miyojo (LM 11)

F. Lauga, 1976

D: 248 tons (303 normal)
 S: 11 kts
 Dim: 27.0 × 12.0 × 2.58
 M: 2 Niigata 6MG 16HS diesels; 2 CP props; 600 hp
 Electric: 135 kVA
 Fuel: 15 tons
 Range: 1,360/10
 Man: 18 tot.

Remarks: Has catamaran hull. Replaced a very similar ship with same name and number, which was lost in 4-72.

♦ 3 Hakuun class Bldr: Sumidagawa, Tokyo (LM 114: Yokohama Yacht)

LM 106 Hakuun (In serv. 28-2-78) LM 107 Toun (In serv. 3-79) LM 114 Tokuun (In serv. 23-3-82)



Hakuun (LM 106)

Ships of the World, 1984

D: 57.6 tons (92.7 fl) S: 15 kts Dim: 24.00 (23.00 pp) × 6.00 × 1.00 Electron Equipt: Radar: 1/FRA-10 Mk III
M: 2 G.M. 12V71 TI diesels; 2 props; 1,080 hp Electric: 30 kVA Range: 420/13 Man: 10 tot.

Remarks: Prototypes of a new class intended to replace earlier medium (LM) navigational-aid tenders.

◆ 1 Ayabane class Bldr: Shimoda DY, Shimoda

LM 112 AYABANE (In serv. 25-12-72)

D: 187 tons normal S: 12.3 kts Dim: 32.70 × 6.5 × 1.8 M: 1 Hanshin 6 L24SH diesel; 1 prop; 500 hp Electric: 70 kVA Range: 2,330/11.9 Man: 18 tot.

Remarks: The similar Zuiun (LM 101) was stricken 19-1-83.

♦ 6 (+1) 23-meter group Bldrs: Various

| | In serv. | | In serv. | | In serv. |
|---------------|----------|--------------|----------|--------------|----------|
| LM 102 REIUN | 11-71 | LM 110 SEIUN | 3-68 | LM 113 GENUN | 3-73 |
| LM 105 SEKIUN | 3-70 | LM 111 Houn | 3-70 | LM N | |
| LM 108 REIMEI | 8-3-82 | | | | |



Genun (LM 113)

Ships of the World, 1984

D: 67-74 tons (normal) S: 9.7-10.5 kts Dim: 22.1 × 4.65 × 1.4 M: 1 Yanman or G.M. diesel; 120-200 hp Range: 760-1,060/9.5 Man: 11-12 tot.

Remarks: Minor variations but all similar. Akatsuki (LM 107) stricken 1979. The original LM 108, Reimei, completed in 1962, was replaced in 1982. Shoun (LM 109) stricken 1985. One approved in 1985 Budget.

NAVIGATIONAL AID TENDERS (continued)

| • 12 17-meter class | Bldr: Yokohama Yacht | | | |
|---------------------|----------------------|--------------------|----------|--|
| | In serv. | | In serv. | |
| LS 204 HATSUHIKARI | 3-79 | LS 210 SHIMAHIKARI | 17-12-79 | |
| LS 205 NAHAHIKARI | 2-79 | LS 211 AKIHIKARI | 27-2-81 | |
| LS 206 MATSUHIKARI | 3-79 | LS 212 WAKAHIKARI | 5-3-82 | |
| LS 207 MICHIHIKARI | 14-7-79 | LS 213 MIOHIKARI | 18-3-83 | |
| LS 208 NISHIHIKARI | 14-7-79 | LS 214 Urahikari | 27-1-84 | |
| LS 209 Kamihikari | 17-12-79 | LS 215 Tamahikari | 24-2-84 | |



Kamihikari (LS 209)

Ships of the World, 1980

D: 25 tons normal S: 16.3 kts Dim: 17.50 × 4.30 × 0.80 M: 2 E12OT-MF6R diesels; 2 props; 560 hp Endurance: 2 days Range: 230/14.5 Man: 8 tot.

• 6 Urahikari (17-meter) class

Bldrs: Various (In serv. 1972-75)

LS 115 Fusahikari LS 156 SEKIHIKARI

LS 184 Tomohikari LS 201 HARUHIKARI

LS 202 TAKAHIKARI LS 203 SETOHIKARI



Takahikari (LS 202)

Ships of the World, 1984

D: 16 tons (20 fl) S: 17.2 kts Dim: 17.00 × 3.50 × . . . M: 1 MTU UD 626 diesel; 180 hp Range: 320/5 Man: 10 tot.

Bldr: Nippon Hikoki, Yokosuka (LS 188: Ishikawa-♦ 5 (+3) 12-meter class jima, Tokyo)

| | In serv. | | In serv. |
|----------------|----------|--------------|----------|
| LS 181 KEIKO | 29-6-79 | LS 188 TAIKO | 24-1-85 |
| LS 185 SHOKO | 26-2-79 | LS N | |
| LS 186 TOKO | 30-6-79 | LS N | |
| LS 187 GETSUKO | 30-6-79 | LS N | |

D: 9.4 tons (10 fl) S: 15 kts Dim: 12.00 × 3.20 × 0.60 M: 1 diesel; 1 prop; 210 hp Range: 120/13.5 Man: 6 tot.

Remarks: LS 188 may be to a modified design. Three approved in 1985 Budget.

4 Taiko (12-meter) class (In serv. 1970-73)

LS 122 MEIKO LS 153 SUIKO LS 183 HAKUKO LS 219 SAIKO

D: 8 tons (12 fl) S: 14.8 kts Dim: 12.0 × 3.2 × . .

M: 1 MTU UD 626 diesel; 180 hp Range: 130/12.5 Man: 6 tot.

Remarks: Sister Taiko (LS 152) stricken 1-10-84; Kyoko (LS 151), Myoko (LS 171), and Choko (LS 218) in 1985.

| ♦ 11 (+5) No. 1 Kaiko (10-meter) class | |
|--|----|
| LS 144 No. 1 KAIKO (In serv. 5-3-81) | LS |

| Bldr: 1 | Nippon | Hikoki, | Yokosuka |
|---------|--------|----------|------------|
| 158 No. | Q KATE | o (In se | ry 13-2-84 |

4)

| LS 144 No. 1 Kaiko (In serv. 5-3-81) | LS 158 No. 9 Kaiko (In serv. 13-2-84) |
|--|---------------------------------------|
| LS 145 No. 2 KAIKO (In serv. 12-3-81) | LS 160 No. 10 Kaiko (In serv. 21-2-84 |
| LS 146 No. 3 Kaiko (In serv. 19-3-81) | LS No. 11 KAIKO (In serv) |
| LS 148 No. 4 Kaiko (In serv. 10-12-81) | LS N |
| LS 149 No. 5 Kaiko (In serv. 1982) | LS N |
| LS 154 No. 6 Kaiko (In serv. 1982) | LS N |
| LS 155 No. 7 Kaiko (In serv. 12-1-84) | LS N |
| LS 157 No. 8 KAIKO (In serv. 17-1-84) | LS N |
| CIDELECTOR STATE OF S | |



No. 3 Kaiko (LS 146)

Ships of the World, 1984

D: 5.2 tons S: 13 kts Dim: 9.00 × 2.25 × . . . M: 2 Nissan FD606 diesels; 1 prop; 230 hp Range: 130/12.5 Man: 6 tot.

Remarks: Five additional approved in 1985 Budget. Glass-reinforced plastic construction.

 6 No. 1 Yoko (10-meter) class Bldr: IHI Craft, Yokohama (In serv. 1975-79)

LS 114 No. 3 Yoko LS 182 No. 2 Yoko LS 142 No. 5 Yoko LS 180 No. 1 Yoko LS 141 No. 4 Yoko LS 143 No. 6 Yoko

D: 3 tons (5 fl) S: 16.2 kts Dim: 7.3 × 2.45 × 0.5 M: 1 G.M. 3-53N diesel; 112 hp Range: 100/12 Man: 8 tot.

 4 WAKO No. 4 class Bldr: Yanmar Diesel, Arai

LS 117 Wako No. 2 (In serv. 11-10-78) LS 123 Wako No. 4 (In serv. 31-1-74) LS 116 WAKO No. 1 (In serv. 11-10-78) LS 118 Wako No. 3 (In serv. 24-3-79)

D: 2 tons S: 17 kts Dim: 6.0 × 2.4 × . M: 1 gasoline engine; 115 hp Range: 70/17

♦ 5 TENKO No. 1 class Bldr: Yanmar Diesel, Arai

LS 137 TENKO No. 4 (In serv. 30-9-72) LS 125 Tenko No. 1 (In serv. 28-7-70) LS 102 Tenko No. 2 (In serv. 30-9-71) LS 105 TENKO No. 5 (In serv. 4-12-73) LS 103 TENKO No. 3 (In serv. 30-9-71)

D: 0.6 tons S: 9 kts Dim: $5.6 \times 1.6 \times$. M: 1 Yanmar outboard; 12 hp Range: 20/9

♦ 5 EKO No. 1-class wooden launches

LS 106 Eko No. 1 (In serv. 30-9-70) LS 174 Eko No. 4 (In serv. 16-10-70) LS 113 Eko No. 2 (In serv. 30-9-70) LS 112 Eko No. 5 (In serv. 30-9-71) LS 163 Eko No. 3 (In serv. 31-10-70)

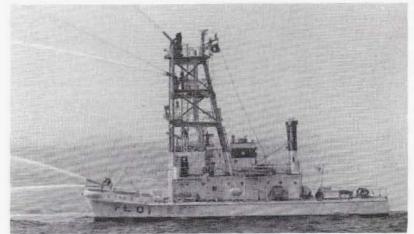
D: 4.2 tons S: 6.2 kts Dim: 7.60 × 2.2 × . . . M: 1 diesel; 12 hp Range: 80/6.2

FIREBOATS

Note: Most patrol ships, boats, and craft are fitted for fire-fighting.

• 5 Hiryu class Bldr: Nippon Kokan, Yokohama (FL 05: Yokohama Yacht)

| | In serv. | | In serv. |
|--------------|----------|--------------|----------|
| FL 01 Hiryu | 4-3-69 | FL 04 KAIRYU | 18-3-77 |
| FL 02 Shoryu | 4-3-70 | FL 05 Suiryu | 24-3-78 |
| FL 03 NANRYU | 4-3-71 | | |



Hiryu (FL 01)

1975

D: 199 tons (251 normal) S: 13.7 kts Dim: 27.5 × 10.4 × 2.1 M: 2 Ikegai-MTU MB820Db diesels; 2 props; 2,200 hp Electric: 70 kVA Range: 400/13 Man: 14 tot.

FIREBOATS (continued)

REMARKS: Catamaran hulls. For fighting fires on board supertankers. 14.5m³ tank for fire-fighting chemicals. One 45-meter-range chemical sprayer; seven 60-meter-range water cannon.

♦ 10 Ninobiki class

Bldrs: FM 02, FM 06, FM 08, FM 10: Sumidagawa, Tokyo: Others: Yokohama Yacht

| | In serv. | | | In serv. |
|----------------|----------|---------------|---|----------|
| FM 01 NINOBIKI | 25-2-74 | FM 06 Nachi | | 14-2-76 |
| FM 02 Yodo | 30-3-75 | FM 07 KEGON | | 29-1-77 |
| FM 03 OTOWA | 25-12-74 | FM 08 Minoo | | 27-1-78 |
| FM 04 SHIRAITO | 25-2-75 | FM 09 RYUSEI | 4 | 24-3-80 |
| FM 05 Котовікі | 31-1-76 | FM 10 Kyotaki | | 25-3-81 |



Otowa (FM 03)

1975

D: 89 tons (99 normal)
 S: 13.4 kts
 Dim: 23.00 × 6.00 × 1.55
 M: 1 Ikegai MTU MB820Db and 2 Nissan UDV 816 diesels; 3 props; 1,600 hp
 Electric: 40 kVA Range: 234/13.4 Man: 12 tot.

Remarks: Four fire pumps: one of 6,000 l/min., two of 3,000 l/min., and one of 2,000 l/min. Have two 750-liter and one 5,000-liter foam tanks.

ENVIRONMENTAL-PROTECTION CRAFT

◆ 1 Katsuren-class radiation monitoring craft Bldr: Ishihara, Takasago MS 03 Katsuren (In serv. 13-12-75)

D: 30 tons (46 fl) S: 12.3 kts Dim: 16.50 × 5.50 × 1.10 M: 2 UDV 816 diesels; 2 props; 500 hp Range: 190/10.8 Man: 9 tot.

◆ 2 Kinagusa-class radiation monitoring craft Bldr: Sumidagawa, Tokyo MS 01 Kinagusa (In serv. 25-9-70) MS 02 Saikai (In serv. 1-10-70)



Saikai (MS 02)

Ships of the World, 1984

D: 16 tons (23 fl) **S:** 8.1 kts **Dim:** 10.50 × 5.00 × 0.63 **M:** 2 UD 326 diesels; 2 props; 180 hp **Range:** 170/7.6 **Man:** 8 tot.

♦ 1 (+ . . .) Sazankurosu-class oil-spill surveillance craft

SS 35 SAZANKUROSU (In serv. 20-9-84)

D: 4.7 tons S: 25 kts Dim: $7.0 \times 2.3 \times ...$ M: 1 AQ 260A inboard/outboard motor; 130 hp Range: ... / ... Man: ... tot.

◆ 32 Orion-class oil-spill surveillance craft Bldr: Yokohama Yacht and Yanmar Diesel, Arai (In serv. 1972-1979)

| Yanmar Diesel, A | Arai (In serv. 1972-19 | 79) | |
|------------------|------------------------|------------------|-----------------|
| SS 01 ORION | SS 12 SPICA | SS 23 Perseus | SS 33 ALDEBARAN |
| SS 02 Pegasus | SS 13 SIRIUS | SS 24 CENTAURUS | SS 34 Pleiades |
| SS 04 NEPTUNE | SS 14 VEGA | SS 25 Andromeda | |
| SS 05 JUPITER | SS 16 Procyon | SS 26 Altair | |
| SS 06 VENUS | SS 17 LEO | SS 27 HERCULES | |
| SS 07 Cassiopeia | SS 18 Polaris | SS 28 Gemini | |
| SS 08 PHOENIX | SS 19 RIGEL | SS 29 Aries | |
| SS 09 SERPENS | SS 20 Cygnus | SS 30 COMET | |
| SS 10 CARINA | SS 21 DENEB | SS 31 Regulus | |
| SS 11 CAPELLA | SS 22 Mercury | SS 32 Betelgeuse | |



Polaris (SS 18)

Ships of the World, 1984

D: 2.1 tons (5 fl)
S: 28.0 kts
Dim: 5.99 × 2.44 × . . .
M: 1 AQ 200 inboard/outboard motor; 130 hp
Range: 85/25
Man: 6 tot.
REMARKS: Propulsion and speeds vary: 16-28 kts from 130-210 hp.

♦ 1 Antares-class oil-spill surveillance craft Bldr: Sajima Marina, Aburappo

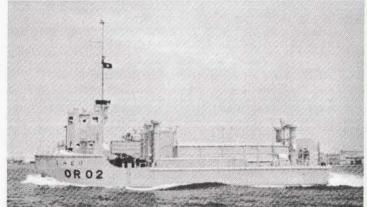
SS 15 ANTARES (In serv. 1-7-75)

D: 1.6 tons S: 25 kts Dim: 5.49 × 2.41 × . .

M: 1 Yanmar YA-19J2 diesel waterjet; 220 hp Range: 170/24 Man: 6 tot.

♦ 5 Shirasagi-class oil-spill clearance boats Bldr: Various (In serv. 1977-79)

OR 01 Shirasagi OR 03 Mizunagi OR 05 Isoshigi OR 02 Shiratori OR 04 Chidori



Shiratori (OR 02)

Ships of the World, 1984

D: 78.5 tons (153 fl)
 S: 6.8 kts
 Dim: 22.0 × 6.4 × 0.9
 M: 2 UD 626 diesels; water-jet drive; 390 hp
 Range: 160/6
 Man: 7 tot.

♦ 3 Uraga-class oil-skimmer boats Bldr: Lockheed, U.S.A. (In serv. 1975-76)
OS 01 TSURUMI (ex-Uraga) OS 02 BISAN OS 03 NARUTO

D: 11 tons (fl) S: 6 kts Dim: 8.26 × 5.00 × 0.70

M: 1 HR-6 diesel; 2 props; 90 hp Range: 90/4.5 Man: 4 tot.

◆ 18 M-101-class oil-boom-extender barges Bldrs: Various (In serv. 1974-76)

OX 01 to OX 06, OX 08 to OX 19 (M 101 to M 119)



M 101 (OX 01)

1975

D: 48 tons **Dim:** $22.00 \times 7.20 \times 0.45$

◆ 2 miscellaneous wooden oil-spill craft Bldr: Eidai Sangyo (In serv. 1967)
No. 02 M 603 No. 34 M 804

D: 1.1 tons S: 23.4 kts Dim: 6.0 × 2.1 × . . . M: 1 outboard motor; 80 hp Range: 80/23

JAPAN (continued)

TRAINING CRAFT

♠ 1 A-class (In serv. 12-75)

D: 15 tons S: 15.5 kts Dim: 14.0 × 3.6 × . . . M: 1 diesel; 325 hp Range: 243/15.5

◆ 2 C-I class

Bldr: Yanmar Diesel, Arai (In serv. 9-75)

C-II

D: 1 ton S: 28 kts Dim: 4.9 × 2.1 × . M: 1 gasoline engine; 380 hp Range: 80/28

Hashemite Kingdom of Jordan

COASTAL GUARD

Personnel: 300 men, including those at the base at Aqaba and frogmen

MERCHANT MARINE (1984): 8 ships - 48,300 grt

Note: Some 3 to 630-meter patrol boats were reportedly ordered in Greece during 1982. Confirmation and details are lacking.

• 4 U.S.-supplied small craft

♦ 2 U.S.-supplied small craft

Bldr: Bertram, Miami

FAYSAL HAN HASAYU MUHAMMED

D: 8 tons S: 25 tons Dim: 11.6 × 4.0 × 0.5

A: 1/12.7-mm mg-2/7.62-mm mg

Bldr: Bertram, Miami

ALI ABD ALLAH

D: 6.5 tons S: 25 kts Dim: 9.26 × 3.26 × 0.46 A: 1/12.7-mm mg-1/7.62-mm mg Man: 8 tot.

KAMPUCHEA

Democratic of Kampuchea

MERCHANT MARINE (1980): 3 ships - 3,558 grt (No recent data available)

Note: The units listed below have been delivered to forces subservient to the Vietnamese government. A few craft left behind in 1975 by fleeing forces may still exist, but no reliable details are available.

PATROL BOATS

3 Soviet Turya-class hydrofoils

D: 215 tons (250 fl) S: 40 kts

Dim: 39.0×7.6 (12.5 over foils) \times 2.0 (4.0 over foils)

A: 2/57-mm AA aft (II × 1) - 2/25-mm AA fwd (II × 1)

Electron Equipt: Radar: 1/Pot Drum, 1/Muff Cob

IFF: 1/High Pole B, 1/Square Head interrogator

M: 3 M504 diesels; 3 props; 15,000 hp Range: 400/38; 650/25 Man: 24 tot.

Remarks: One unit delivered 3-84, two on 23-2-85 to Kampong Song. Torpedo tubes and helicopter-type dipping sonar deleted. Fixed hydrofoils forward, with stern planing on surface. Use Osa-II hull and propulsion.

RIVER PATROL BOATS

4 Soviet Shmel class

D: 60 tons (fl) S: 22 kts Dim: 28.3 × 4.6 × 0.9

A: 1/76.2-mm, 48-cal. gun fwd. in tank turret (with one coaxial 7.62-mm, mg) - 2/25-mm AA aft (II × 1) - 5/76.2-mm mg (I × 5) - 1/122-mm RL (XVIII × 1) - mines

M: 2 M50-F4 diesels; 2 props; 2,400 hp Range: 240/20; 600/10

Man: 15-20 tot.

Remarks: Delivered 1984-85.

AMPHIBIOUS CRAFT

• 2 Soviet landing craft

D: 70 tons (fl) S: 10 kts Dim: 19.0 × 4.3 × 1.0 M: 2 diesels; 2 props; 600 hp Man: 5 tot.

Remarks: Probable T4 class, delivered 1984-85.

Republic of Kenya

Personnel: 350 total

Merchant Marine (1984): 25 ships - 6,652 grt

GUIDED MISSILE PATROL BOATS

• 0 (+2) "Province" class Bldr: Vosper-Thornycroft, Portchester, U.K.

Laid down In serv. P. . . N. . . 11-84 1987 P. . . N. . . 11-84 1987

D: 311 tons light (363 fl) S: 40 kts Dim: 56.7 (52.0 pp) × 8.2 × 2.1

A: 4/Otomat Mk I SM (II × 2) - 1/76-mm OTO Melara Compact DP-

2/30-mm BMARC/Oerlikon GCM A22 AA (II × 1)

Electron Equipt: Radar: 1/Decca AC 1226, 1/Plessey AWS-4, 1/Marconi ST-802 f.c.

EW: 2 Barricade RL (IX × 2)

M: 4 Paxman Valenta 18 CM 200 diesels; 4 props; 17,900 hp (15,000 sust.) - 2 electric outdrives; 160 hp

Electric: 420 kw Fuel: 45.5 tons Range: . . . Man: 40 tot.

Remarks: Ordered 9-84. Reported to be generally similar to craft built for Oman and Egypt.

Bldr: Brooke Marine, Lowestoft, U.K. 3 32-meter class

L In serv. 28-175 16-6-75 P 3121 MADARAKA 14-3-75 P 3122 Jamhuri 16-6-75 P 3123 HARAMBEE 2-5-75 28-8-75



Madaraka (P 3121) - after modernization

4-84

D: 120 tons (145 fl) **S**: 25.5 kts **Dim**: $32.6 \times 6.1 \times 1.7$

A: 4/Gabriel SSM (I × 4) -2/30-mm AA BMARC GCM-AO AA (II × 1)

M: 2 Paxman 16-cyl. Valenta diesels; 2 props; 5,400 hp

Electron Equipt: Radar: 1/Decca 1226 Range: 2,300/12 Man: 3 officers, 18 men

Remarks: Ordered 10-5-73. P 3121 and 3123 received Gabriel missiles during 1982; P 3122 in 1983, with 2/40-mm AA removed.

Bldr: Brooke Marine, Lowestoft, U.K. 1 37.5-meter class

Laid down T. In serv. P 3100 MAMBA 17-2-72 6-11-73 7-2-74



Mamba (P 3100) - prior to modernization

1975

D: 130 tons (160 fl) S: 25 kts Dim: 37.5 × 6.86 × 1.78 A: 4/Gabriel SSM (I × 4) - 2/30-mm BMARC GCM-AO AA (II × 1) KENYA (continued)

GUIDED MISSILE PATROL BOATS (continued)

Electron Equipt: Radar: 1/Decca 1226

M: 2 Paxman 16-cyl. Valenta diesels; 2 props; 4,000 hp

Range: 3,500/13 Man: 3 officers, 22 men

Remarks: Rearmed 1982, with 2/40-mm AA removed.

PATROL BOATS

Bldr: Vosper Portsmouth, U.K. ♦ 3 Vosper 31-meter class

L In serv. P 3110 SIMBA 9-9-65 23-5-66 7-7-66 P 3112 CHUI 25-11-65 P 3117 NDOVU (ex-Twigg) 22-12-65 27-7-66



Simba (P 3110)

Vosper, 1966

D: 96 tons (109 fl) S: 24/23 kts Dim: 31.25 (28.95 pp) \times 5.95 \times 1.65 A: 2/40-mm AA Mk 7 (I \times 2) Electron Equipt: Radar: 1/Decca 914 M: 2 Paxman Ventura 12-cyl. diesels; 2 props; 2,900 hp Fuel: 14 tons Range: 1,500/16 Man: 3 officers, 20 men

AUXILIARIES

1 large harbor tug

Bldr: James Lamont, Port Glasgow, U.K.

NGAMIA (In serv. 1969)

D: . . . S: 14 kts Dim: 35.3 × 9.3 × 3.9

M: Diesels; 1 prop; 1,200 hp

Remarks: 298 grt. Transferred to Navy from Mombasa Port Authority, 1-83.

KIRIBATI

(formerly Gilbert Islands)

MERCHANT MARINE (1984): 4 ships - 2,272 grt

PATROL CRAFT

◆ 1 17-meter glass-reinforced plastic patrol craft (In serv. 1980)

Bldr: Cheverton, Cowes

D: 22 tons (fl) S: 23.6 kts Dim: 17.0 × 4.5 × 1.2

A: 1/7.62-mm mg M: 2 G.M. 8V-71 TI diesels; 2 props; 800 hp

Range: 790/18; 1,000/12 Man: 7 tot.

KOREA, NORTH

Democratic People's Republic of Korea

Personnel: Approximately 30,300 men, plus 40,000 reserves

Merchant Marine (1984): 61 ships - 459,958 grt (tankers: 4 ships - 171,219 grt) (Note: This represents only ships engaged in international trade.)

SUBMARINES

◆ 17 Soviet Romeo class (In serv. 1973-. . .)

D: 1,330/1,700 tons S: 15.2/13 kts Dim: 76.60 × 6.70 × 4.95

A: 8/533-mm TT (6 fwd, 2 aft) - 14 torpedoes or 28 mines

Electron Equipt: Radar: 1/Snoop Plate

Sonar: Tamir-5L active, Feniks passive array

M: 2 Type 37D diesels of 2,000 hp, electric drive; 2 props; 2,700 hp - 2 electric creep motors; 100 hp

Endurance: 60 days Range: 14,000/9 surf.; 7,500/5 snorkel; 350/. . . sub.

Man: 53 tot.

REMARKS: Seven are of Chinese construction, transferred in 1973 (two), 1974 (two), and 1975 (three). The others have been built at Mayang Do in North Korea. One lost off east coast 20-2-85. Max. diving depth: 300 m (270 normal). Batteries have 224 cells, are rated at 6,000-Amp/Hr.

• 4 Soviet Whiskey class

D: 1,050/1,350 tons **S:** 16/17 kts **Dim:** $76.0 \times 6.3 \times 4.8$

A: 6/533-mm TT (4 fwd, 2 aft) - 12 torpedoes or 24 mines

Electron Equipt: Radar: 1/Snoop Plate

Sonar: Herkules, passive array

M: 2 Type 37D diesels of 2,000 hp, diesel-electric drive; 2 props; 2,500 hp

Endurance: 60 days Range: 4,000/5 (snorkel) Man: 50 tot.

Remarks: Transferred from the U.S.S.R. during 1960s.

Note: Also in use are as many as 18 locally built midget submarines, intended primarily for the transport of commandos. One is reported to be 41-m. overall, but the others are probably much smaller.

FRIGATES

Bldr: North Korea Naiin class

3025 (In serv. 1973) 3026 (In serv. 1975)

D: 1,200 tons (1,500 fl) S: 25 kts Dim: 100.0 × 10.0 × 2.7

A: 2/SS-N-2 Styx SSM (II × 1) − 2/100-mm DP (I × 2) − 4/57-mm AA $(II \times 2) - 4/25$ -mm AA $(II \times 2) - 8/14.5$ -mm mg $(II \times 4) - 4/d.c.$ projectors -30 mines

Electron Equipt: Radar: 1/Skin Head, 1/Pot Head, 1/Slim Net Sonar:

M: 2 diesels; 2 props; 15,000 hp Range: 4,000/14 Man: 155 tot.

Remarks: Very primitive design, crude in finish and appearance. Trainable missile launcher mount (Chinese?) replaced 3/533-mm TT (III × 1) in early 1980s. Reports of two others apparently incorrect.

CORVETTES

• 4 Sariwan class Bldr: North Korea, 1965

D: 475 tons S: 21 kts Dim: 62.1 × 7.3 × 2.4

A: 1/76-mm DP -2/57-mm AA (II \times 2) -4/25-mm AA (II \times 2) -4/d.c.projectors

M: 2 diesels; 2 props; 3,000 hp

Remarks: Data dubious. Design based on Soviet Tral-class minesweeper. Possible pendant numbers: 725, 726, 727, 728.

GUIDED-MISSILE PATROL BOATS

♦ 8 (+...) Soju class

Bldr: North Korea

D: approx. 220 tons (fl) S: 34 kts Dim: 43.0 × . . . × . . .

A: 4/SS-N-2 Styx SSM . .

M: 3 Type M503A diesels; 3 props; 12,000 hp

Range: . . . Man: . . .

Remarks: North Korean version of Osa-I. Some reports indicate only four in service.

♦ 4 (+ . . .) So Hung class Bldr: North Korea

D: 80 tons (fl) S: 40 kts Dim: 26.8 × 6.2 × 1.5

A: 2/SS-N-2 Styx SSM — 2/25-mm AA (II × 1)

Electron Equipt: Radar: probably 1/Square Tie

M: 4 M50-F4 diesels; 4 props; 4,800 hp Man: 19 tot.

Remarks: Steel-hulled version of Soviet Komar class. With only four built, may not have been successful. May use the Chaho-class patrol boat hull.

• 8 Soviet Osa-I class

D: 180 tons (215 fl) S: 35 kts Dim: 38.6 × 7.6 × 1.8

A: 4/SS-N-2A Styx SSM (I × 4) - 4/30-mm AA (II × 2)

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt

IFF: 2/Square Head, 1/High Pole

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 30 tot.

• 8 Soviet Komar class

D: 71 tons (82 fl) S: 40 kts Dim: 25.3 × 7.0 × 1.9

A: 2/SS-N-2A Styx SSM (I × 2) − 2/25-mm AA (II × 1)

Electron Equipt: Radar: 1/Square Tie M: 4 M50-F4 diesels; 4 props; 4,800 hp Range: 400/30 Man: 18 tot.

Remarks: Wooden construction; hull same as P 6 torpedo boat.

PATROL BOATS

♦ 7 (+. . .) Taechong class

Bldr: North Korea (In serv. 1975-. . .)

D: 140 tons (165 fl) S: . . . Dim: 44.2 × 5.5 × 2.4 (props)

A: 2/57-mm AA (II × 1) -1/37-mm AA -2/25-mm AA (II × 1) -4/14.5-mm mg (II × 2) -2/RBU-1200 ASW RL -2/d.c. racks

Electron Equipt: Radar: 1/Pot Head - Sonar: Tamir-11 (HF)

M: Diesels; . . . props; . . . hp Range: . . . Man: . . .

KOREA-NORTH (continued) PATROL BOATS (continued)

• 6 Chinese Hainan class

D: 360 tons (400 fl) S: 30.5 kts Dim: 58.77 × 7.20 × 2.20

A: 4/57-mm AA (II × 2) — 4/25-mm AA (II × 2) — 4/RBU-1200 ASW RL

 $(V \times 4) - 2/d.c.$ projectors -2/d.c. racks - mines

Electron Equipt: Radar: 1/Pot Head M: 4 Type 9D diesels; 4 props; 8,800 hp Man: 70 tot.

REMARKS: Two transferred in 1975; two in 1976; and two in 1978.

• 66 Chaho class Bldr: North Korea

D: 80 tons (fl) S: 40 kts Dim: 27.7 × 6.1 × 1.8

A: 4/14.5-mm AA (II × 2) - 1/200-mm artillery RL (40 tubes)

M: 4 M50 diesels; 4 props; 4,800 hp

Remarks: Based on P 6 design, but have steel hull.

♦ 45 Chong Jin and Chong Ju classes Bldr: North Korea

Remarks: Data as for Chaho class, except armaments include: one 85-mm tank gun and four 14.5-mm antiaircraft guns (II × 2). Chong Ju variant substitutes a multiple 122-mm rocket launcher (XI × 1) for the tank turret.

♦ 15 Chinese Shanghai II class

D: 122.5 tons (134.8 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55

A: 4/37-mm AA (II × 2) - 4/25-mm AA (II × 2) - d.c. - mines

Electron Equipt: Radar: 1/Pot Head

M: 2 M50-F4, 1,200-hp and 2/12D6, 910-hp diesels; 4 props; 4,220 hp

Range: 750/16.5 Electric: 39 kw Endurance: 7 days Man: 36 tot.

Remarks: Transferred circa 1967-69.

♦ 18 Soviet S.O. 1 class

D: 190 tons (215 fl) S: 28 kts Dim: 42.0 × 6.1 × 1.9

A: Soviet version: 4/25-mm AA (II × 2) - 4/RBU-1200 ASW RL (V × 4) - 2/d.c. racks - mines

North Korean version: 1/85-mm DP -2/37-mm AA (I \times 2) -4/14.5-mm mg (II \times 2)

Electron Equipt: Radar: 1/Pot Head or Don-2—Sonar: 1/Tamir-11(HF)

M: 3 Type 40D diesels; 3 props; 7,500 hp Man: 30-40 tot.

Remarks: Six transferred from U.S.S.R. in antisubmarine configuration 1957-61; remainder built in Korea for patrol purposes.

♦ 8 Chinese Shantou (Swatow) class (In serv. early 1960s)

D: 80 tons (fl) **S**: 28 kts **Dim**: $25.1 \times 6.0 \times 1.8$

A: 4/37-mm AA (II \times 2) — 2/14.5-mm mg (I \times 2)

M: 4 diesels; 4 props; 3,000 hp

♦ 4 Chodo class Bldr: North Korea (In serv. late 1950s)

D: 130 tons S: 24 kts Dim: 42.7 × 5.8 × 2.6

A: 1/76-mm DP -3/37-mm AA (I \times 3) -4/25-mm AA (II \times 2)

Electron Equipt: Radar: 1/Skin Head

M: 2 diesels; 2 props; 6,000 hp Man: 24 tot.

◆ 4 K-48 class Bldr: North Korea (In serv. 1951-54)

D: 110 tons (fl) S: 24 kts Dim: 38.1 × 5.5 × 1.5

A: 1/76-mm DP - 3/37-mm AA (I × 3) - 4/14.5-mm AA (II × 2)

Electron Equipt: Radar: 1/Skin Head

M: 2 diesels; 2 props; 5,000 hp

Note: Twenty wooden-hulled Soviet-built M.O. IV-class patrol boats, built 1938-47 and transferred to North Korea in the 1950s, have been dropped from this edition as unlikely still to be operational.

TORPEDO BOATS

• 4 Soviet Shershen class

D: 135 tons (170 fl) S: 45 kts Dim: 34.7 × 6.7 × 1.5

A: 4/30-mm AA (II × 2) -4/533-mm TT -2/d.c. racks (12 d.c.)

Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt

IFF: 1/Square Head, 1/High Pole A

M: 3 M503A diesels; 3 props; 12,000 hp Range: 460/42; 850/30

• approx. 40 Soviet P 6/North Korean Sinpo class

D: 55 tons (66.5 fl) **S:** 43 kts **Dim:** $25.3 \times 6.1 \times 1.7$

A: 4/25-mm AA (I \times 2) — 2/533-mm TT — 8/d.c. in tilt racks Electron Equipt: Radar: 1/Skin Head or Pot Head

IFF: 1/Dead Duck, 1/High Pole M: 4 M50-F4 diesels; 4 props; 4,800 hp Range: 450/30

Remarks: Forty-five transferred by U.S.S.R. during early 1960s; wooden construction.

A few similar Sinpo class units were built in Korea during the early 1970s. Steel

construction. Some lack torpedo tubes but have additional AA guns.

12 Iwon class Bldr: North Korea (In serv. 1970s)

D: 25 tons (fl) S: 45 kts Dim: 19.2 × 3.7 × 1.5

A: 2/25-mm AA (II × 2) - 2/533-mm TT M: 3 diesels; 3 props; 3,600 hp

♦ 6 An Ju class Bldr: North Korea (In serv. 1970s)

D: 35 tons (fl) S: 50 kts Dim: 19.8 × 3.7 × 1.8

A: 2/25-mm AA (II × 2) -2/533-mm TT

M: 4 M50 diesels; 4 props; 4,800 hp Man: 20 tot.

74 Sin Hung class Bldr: North Korea (In serv. 1970s)

D: 25 tons (fl) S: 40 kts Dim: 18.3 × 3.4 × 1.7

A: 4/14.5-mm (II × 2) -2/450-mm TT M: 2 diesels; 2 props; 2,400 hp

AMPHIBIOUS CRAFT

• 4 Hantae-class medium landing ships (In serv. 1980s)

REMARKS: Reportedly 50-m overall and capable of carrying three tanks.

♦ 100 Nampo-class assault landing craft Bldr: North Korea

D: 82 tons (fl) S: 40 kts Dim: 27.7 × 6.1 × 1.8 A: 4/14.5-mm AA (II × 2) M: 4 M50-F4 diesels; 4 props; 4,800 hp Range: 375/40 Man: 19 tot. Electron Equipt: Radar: 1/Pot Head

Remarks: A version of the Chaho-class gunboat with a bow ramp and troop accommodations forward.

• 9 Hanchon-class utility landing craft

Bldr: North Korea

REMARKS: No reliable data available.

• 18 smaller landing craft, LCM type

KOREA, SOUTH

Republic of Korea

Personnel: Approximately 29,000 men, plus 20,000 Marines

Merchant Marine (1984): 1,799 ships — 6,771,402 grt (tankers: 137 ships — 1,700,813 grt)

Naval Aviation: About a dozen land-based U.S. S-2E Tracker aircraft remain employed for surveillance and ASW. Ten or more Alouette-III helicopters are available for use on destroyers.

Note: Pendant numbers are subject to change at unspecified intervals. The numerals "0" and "4" are considered unlucky and are not used.

SURMARINES

Remarks: A 120-ton submarine of local design was laid down during 1982 at Hyundai Shipyard. No details are available. A program to construct seagoing attack submarines of European design was officially announced as delayed for three years in late 1984; as many as a dozen had been contemplated.

• 5 ex-U.S. Gearing class, FRAM I

| | Bldr | Laid down | L | In serv. |
|---|-------------------------------------|-----------|----------|----------|
| 919 Taejon (ex-New, DD 818) | Consolidated Steel, Orange, Tex. | 14-4-45 | 18-8-45 | 5-4-46 |
| 921 Kuang Ju (ex-Richard | Consolidated Steel, | 31-7-45 | 2-3-46 | 23-5-46 |
| E. Kraus, DD 849) 922 Kang Won (ex- | Orange, Tex. Federal SB, | 19-10-44 | 8-7-45 | 21-9-45 |
| William R. Rush, DD 714) 923 Kyong KI (ex-Newman | Newark, N.J. Consolidated Steel, | 10-10-44 | 17-3-45 | 26-7-45 |
| K. Perry, DD 883) 925 Jeong Ju (ex-Rogers, | Orange, Tex. Consolidated Steel, | 3-6-44 | 20-11-44 | 26-3-45 |
| DD 876 | Orange, Tex. | | | |



Taejon (919) - alongside Kang Won (922)

SUBMARINES (continued)

D: 2,425 tons (3,500 fl) S: 30 kts

Dim: 119.03 (116.74 wl) × 12.52 × 4.45 (6.4 sonar)

A: 919, 921, 922: 4 Harpoon SSM (II × 2) -4/127-mm DP (II × 2) -2/40-mm AA (II \times 1) - 4/20-mm AA (II \times 2) - 6/324-mm Mk 32 ASW TT (III \times 2) -1/Alouette-III ASW helo

923, 925: 4/127-mm DP (IV × 2) — 2/40-mm AA (II × 1) — 4/20-mm AA (I × 4) - 1/ASROC Mk 116 ASW RL (VIII × 1) - 6/324-mm Mk 32 ASW TT

Electron Equipt: Radar: 1/SPS-10, 1/SPS-29 (919, 921: SPS-40), 1/Mk 25 Sonar: SQS-23

EW: WLR-1, 2 chaff RL - TACAN: SRN-15

M: 2 sets GT; 2 props; 60,000 hp Electric: 1,200 kw

Boilers: 4 Babcock & Wilcox; 39.8 kg/cm², 454 C Fuel: 640 tons

Range: 4,800/15; 2,400/25 Man: 274 tot.

Remarks: 919, 921 were transferred 25-2-77; 922 on 1-7-79; 923 on 25-7-81; 925 on 11-8-81. Have one Mk 37 director, and 1 Mk 51 Mod. 2 for 40-mm; 40-mm AA added fwd, 20-mm AA amidships. Harpoon added 1979 on ships without ASROC. ULQ-6 ECM equipment removed.

♦ 2 ex-U.S. Gearing class, FRAM II Bldr: Bath Iron Works

| | Laid down | L | In serv. |
|---------------------------------|-----------|----------|----------|
| 915 Chung Buk | 12-6-44 | 29-10-44 | 8-9-44 |
| (ex-Chevalier, DDR 805) | | | |
| 916 Jeong Buk | 4-9-44 | 28-1-45 | 6-4-45 |
| (ex-Everett F. Larson, DDR 830) | | | |



Jeong Buk (916)

J. W. Goss, 11-81



Chong Buk (915)

G. Gyssels, 11-81

D: 2,400 tons (3,500 fl) S: 30 kts Dim: 119.17 × 12.45 × 5.8

A: 4/Harpoon (II \times 2) — 6/127-mm DP (II \times 3) — 2/20-mm AA (I \times 2) — 2/12.7-mm mg (I \times 2) — 6/324-mm Mk 32 ASW TT (III \times 2) — 2/Mk 11

Hedgehog — 1/d.c. rack — 1/Alouette-III helicopter **Electron Equipt:** Radar: 1/SPS-10, 1/SPS-40, 1/Mk 25 Sonar: SQS-29 series — TACAN: SRN-15 EW: WLR-1, 2 chaff RL

M: 2 sets GT; 2 props; 60,000 hp Electric: 1,200 kw

Boilers: 4 Babcock & Wilcox; 39.8 kg/cm², 454°C Fuel: 640 tons

Range: 4,800/15; 2,400/25 Man: 14 officers, 260 men

REMARKS: Transferred on loan 5-7-72 and 30-10-72; sold outright 31-1-77. One Mk 37 director for 127-mm guns. Harpoon added 1979, flight deck widened and strengthened. The 20-mm AA are on the helicopter deckhouse. ULQ-6 ECM equipment

◆ 2 ex-U.S. Allen M. Sumner class, FRAM II

| | Bldr | Laid down | L | In serv. |
|-------------------------------------|--------------------------|-----------|---------|----------|
| 917 Dae Gu | Federal SB, Kearny, N.J. | 19-9-43 | 14-6-44 | 8-9-44 |
| (ex-Wallace L. Lind, DD 703) | | | | |
| 918 Inchon (ex-De Haven, DD 727) | Bath Iron Works | 9-8-43 | 9-1-44 | 31-3-44 |

D: 2,350 tons (3,320 fl) S: 34 kts Dim: 114.8 \times 12.4 \times 5.2 A: 4/Harpoon SSM (II \times 2) — 6/127-mm AA (II \times 3) — 4/40-mm AA (II \times 2) — 6/324-mm Mk 32 ASW TT (III × 2) - 2/Mk 11 Hedgehogs - 1/d.c. rack 1/Alouette-III helicopter

Electron Equipt: Radar: 1/SPS-10, 1/SPS-40 (918: SPS-29), 1/Mk 25 Sonar: 1/SQS-29 series, 1/SQA-10 VDS (917 only) EW: WLR-1, 2 chaff RL

M: 2 sets G.E. GT; 2 props; 60,000 hp Electric: 1,200 kw Boilers: 4 Babcock & Wilcox; 39.8 kg/cm2, 454°C Man: 235 tot.

REMARKS: Transferred 12-73. Harpoon added 1978-79; helicopter deck and hangar enlarged to accommodate Alouette-III, 1978.

♦ 2 ex-U.S. Fletcher class

| | Bldr | Laid down | L | In serv. |
|------------------------------------|-----------------------------|-----------|---------|----------|
| 911 CHUNG MU (ex-Erben, DD 631) | Bath Iron Works | 28-10-42 | 21-3-43 | 28-5-43 |
| 913 Pusan (ex-Hickox, DD 673) | Federal SB, Kearny, N.J. | 12-3-43 | 4-7-43 | 10-9-43 |

D: 2,050 tons (2,850 fl) **S:** 35 kts **Dim:** 114.85 (wl) \times 12.03 \times 5.5 **A:** 5/127-mm 38-cal. (I \times 5) — 10/40-mm AA (IV \times 2, II \times 2) — 2/Hedgehog — 6/324-mm Mk 32 ASW TT (IV \times 2)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-6C, 1/Mk 25 Sonar: 1/SQS-4-EW: WLR-1

M: 2 sets G.E. GT; 2 props; 60,000 hp Electric: 540 kw Boilers: 4 Babcock & Wilcox; 39.8 kg/cm², 454°C Fuel: 650 tons

Range: 4,500/12; 900/35 Man: 303 tot.

REMARKS: The Chung Mu transferred 1-5-63, the Pusan on 15-11-68; purchased outright 31-1-77. Have one Mk 37 director for 127-mm mount; one Mk 51 Mod. 2 director for each 40-mm mount. Sister Seoul (912) stricken 15-1-82.

FRIGATES

♦ 3 (+2) Ulsan class

| | Bldr | Laid down | L | In serv. |
|-----------|---------------------|-----------|---------|----------|
| 951 Ulsan | Hyundai SY, Ulsan | 1-5-79 | 8-4-80 | 1-1-81 |
| 952 Seoul | Korea SB, Pusan | 1982 | 24-4-84 | 18-12-84 |
| 955 Masan | Korea Tacoma, Masan | | | 8-84 |
| N | Daiwoo SY, Okpo | | | |
| N | Daiwoo SY, Okpo | | | |



Ulsan (951)

Hyundai, 1981

D: 1,600 tons (2,180 fl) **S:** 34 kts **Dim:** $102.0 \times 11.5 \times 3.6$

A: 8/Harpoon SSM (IV × 2) -2/76-mm OTO Melara DP -8/30-mm Emerlec AA (II × 4) -6/324-mm Mk 32 ASW TT (III × 2) -2/d.c. racks

Electron Equipt: Radar: H.S.A. DA-05, 1/H.S.A. ZW-06, 1/H.S.A. WM 28 Sonar: 1/PHS-32 - TACAN: SRN-15

EW: passive intercept, Mk 36 SRBOC (VI \times 2)

M: CODOG: 2 G.E. LM 2500 gas turbines, 53,600 hp; 2 MTU 12V956 diesels, 7,200 hp; 2 CP props

Range: 4,000/18 Electric: 1,600 kw Man: 14 officers, 111 men

Remarks: Dutch electronic equipment, including 2 H.S.A. LIOD optronic standby gun directors. Three additional ordered 1981, and a fourth in 4-84. Later units may employ twin Breda 40-mm AA in lieu of the 30-mm mounts.

FRIGATES (continued)

♦ 8 (+3+...) An Yang Ho (KCX) class Bldrs: (A) Korea Tacoma SB, Chinhae; (B) Hyundai SY, Ulsan; (C) Korea SB & Eng., Pusan; (D) Daewoo SY,

| | Bldr | Laid down | L | In serv. |
|------------|--------|-----------|---------|----------|
| An Yang Ho | A | 1981 | 1982 | 12-83 |
| N | В | 1981 | 15-5-83 | 12-83 |
| Ma San Ho | C | 1981 | 1982 | 12-83 |
| N | D | | 19-6-83 | 12-83 |
| Po Hang | | | | 18-12-84 |
| Kunsan | | | | 18-12-84 |
| KYONG NAM | | | . 4 . | 5-85 |
| N | 4 9 40 | | | -85 |
| N | | | | -86 |
| N | | | | -86 |
| N | | | | |
| | | | | |



Number 757 with 2 Exocet

1985

D: 900 tons (1300 fl) S: 25 kts Dim: 81.0 × 10.4 × 3.1 (2.88 hull)

A: 8/Harpoon (IV × 2) or 2/MM 38 Exocet SSM — 1/76-mm OTO Melara Compact DP — 4/30-mm Emerlec AA (II × 2) — 6/324-mm Mk 32 ASW TT (III × 2) - d.c. racks

Electron Equipt: Radar: 1 . . . nav., 1 H.S.A. WM-28 Sonar: 1/PHS-32-EW: 2 chaff RL

M: CODOG: 1 LM-2500 gas turbine, 27,200 hp; 2 SEMT-Pielstick 12PA6-V280 diesels; 9,600 hp; 2 CP props

Range: 4,000/15 (diesel) Electric: 1,200 kw Man: 8 officers, 79 men

REMARKS: Few reliable details released. First four have Harpoon SSM, later units have Exocet. Some may be all-diesel, with four 4,170-hp MTU diesels. Korea SB, Pusan, had delivered three by 5-85. First four had gas turbine rated at 27,200 hp, later units at 27,800. An additional increment of up to 10 may be ordered. Have also been referred to as the Donghae class.

Note: The U.S. Rudderow-class frigate Chung Nam (827, ex-Holt, DE 706) was stricken during 1-84.

1 ex-U.S. Crosley-class former high-speed transport

Bldr Laid down In serv. 828 CHE JU Charleston Navy Yard, 15-11-43 11-2-44 4-4-45 (ex-William M. Charleston, S.C. Hobby, APD 95)

D: 1,650 tons (2,130 fl) S: 23.6 kts Dim: 93.13 × 11.3 × 3.2

A: 2/127-mm DP (I × 2) — 6/40-mm AA (II × 3) — 6/12.7-mm mg (I × 6) — 1 d.c. rack

Electron Equipt: Radar: 1/SPS-5, 1/SPS-6, 1/Mk 26 — Sonar: QCU-2

M: 2 sets G.E. GT, turbo-electric drive; 2 props; 12,000 hp Boilers: 2 Foster-Wheeler "D"-express; 30.6 kg/cm², 399°C Range: 4,800/12; 2,300/22 Man: 200 tot.

Remarks: Transferred on loan 6-66, and 8-67; purchased outright 15-11-74. Second 127-mm gun added aft, as on Taiwanese sisters. Have low bridge compared to ex-Charles Lawrence ships, below. Can still carry 160 troops; two LCVPs and two LCPLs stowed beneath quadrantal davits. One Mk 52 director for 127-mm gun; three Mk 51 Mod. 2 for 40-mm AA. Sisters Kyong Nam (821, ex-Cavallaro, APD 128) and Ah San (823, ex-Harry L. Corl, APD 825) stricken 1984. Ung Po (825, ex-Julius A. Raven, APD 110) reported stricken 1984 also.

1 ex-U.S. Charles Lawrence-class former high-speed transport

Bldr: Charleston Navy Yard, Charleston, S.C.

Laid down In serv. 827 Jon Nam (ex-Hayter, APD 80) 11-8-43 11-11-43 4-4-45

Remarks: All data essentially the same as for the Crosley class above. Loaned in 8-67; purchased outright 15-11-74. Has high bridge as compared to the Crosley class. All APDs of both classes were laid down originally as DE-destroyer escorts. Sister Kyong Puk (826, ex-Kephart, APD 61) stricken 30-4-85.

GUIDED-MISSILE PATROL BOATS

Bldrs: PGM 352 to 355: Tacoma Boatbuilding Co.; others: 8 PSMM-5 class Korea Tacoma, Chinhae

| | Laid down | In serv. |
|--------------------|-----------|----------|
| PGM 352 PAEK Ku 52 | 1-75 | 14-3-75 |
| PGM 353 PAEK Ku 53 | 2-75 | 14-3-75 |
| PGM 355 PAEK Ku 55 | | 1-2-76 |
| PGM 356 PAEK Ku 56 | | 1-2-76 |
| PGM 357 PAEK Ku 57 | | 1977 |
| PGM 358 PAEK Ku 58 | | 1977 |
| PGM 359 PAEK Ku 59 | | 1977 |
| PGM 361 PAEK Ku 61 | * *.* | 1978 |



Paek Ku 61 (PGM 361)

Ships of the World, 1985

D: 240 tons (268 fl) S: 40 kts Dim: 53.68 (50.30 pp) × 8.00 × 1.63

A: 4/Harpoon SSM (II × 2) -1/76-mm OTO Melara Compact DP -2/30-mm Emerlec AA (II × 1) -2/12.7-mm mg

Electron Equipt: Radar: 1/LN-66 HP, 1/SPG-50

M: 6 AVCO TF-35 gas turbines; 2 CP props; 16,800 hp

Man: 5 officers, 27 men

Remarks: Korean-built units have Westinghouse M-1200 fire-control systems, using inputs from the LN-66 HP radar and an optical director. Early ships have the U.S. Mk 63 GFCS. PGM 352-355 have 2 Standard ARM SSM launchers (each with one reload).

Bldr: Tacoma Boat, Tacoma, Wash. ◆ 1 ex-U.S. Asheville class

In serv. PGM 351 PAEK Ku 51 (ex-Benicia, PG 96) 20-12-69 25-4-70

D: 225 tons (249 fl) S: 40 kts Dim: 50.14 × 7.28 × 2.9

A: 2/Standard ARM SSM box launchers - 1/76.2-mm Mk 34 DP - 1/40-mm $\dot{A}A - 4/12.7$ -mm mg (II \times 2)

Electron Equipt: Radar: 1/Raytheon 1645, 1/SPG-50

M: CODOG: 1 G.E. LM-1500-PE102 gas turbine, 12,500 hp; 2 Cummins VT12-875M diesels; 2 CP props; 1,450 hp

Range: 1,700/16; 390/35 Man: 29 tot.

Remarks: Mk 63 radar GFCS for 76.2-mm Mk 34 gun. Transferred on loan 15-10-71. One reload missile carried for each box launcher.

♦ 2 "Wildcat" type Bldr: Korea Tacoma SB, Chinhae (In serv. 1971-72)

PKM 271 KILURKI 71 PKM 272 KILURKI 72



Kilurki 71 or 72

Korea-Tacoma

D: 120 tons (140 fl) **S:** 34/35 kts **Dim:** $32.9 \times 8.0 \times 1.1$

A: 2/MM 38 Exocet SSM (I × 2) - 1/40-mm AA - 3/12.7-mm mg - 2/barrage $RL(IV \times 2)$

M: PKM 271: 2 MTU MB518D diesels; 3 props; 9,960 hp PKM 272: 3 MTU 16V538 TB90 diesels; 3 props; 10,800 hp

Range: 1,000/20 Man: 4 officers, 22 men

PATROL BOATS

Bldr: Korea Tacoma SB (In serv. 4-8-84) ♦ 1 (+. . .) . . . class

D: 150 tons S: 37 kts Dim: 37.00 × 6.25 × 1.68

A: . . . Electron Equipt: . . .

M: . . .

REMARKS: No other details released. May be prototype for new series intended as antiinfiltration patrol boats.

Bldr: Korea Tacoma, Chinhae (In serv. 1970s) ♦ 32 "Sea Dolphin" type

PKM 211 KILURKI 11 to PKM 219 KILURKI 19

PKM 221 Kilurki 21 to PKM 229 Kilurki 29

PKM 231 KILURKI 31 to PKM 239 KILURKI 39

PKM 251 KILURKI 51 to PKM 259 KILURKI 59



"Sea Dolphin" type

Korea-Tacoma

D: 113 tons (144 fl) S: 34 kts Dim: 33.1 × 6.9 × 2.45 (props)

A: 1/40-mm AA -2/30-mm Emerlec AA (II \times 1) -2/20-mm AA (I \times 2) -2/12.7-mm mg (I \times 2)

M: 2 MTU 16V538 TB90 diesels; 2 props; 10,800 hp (9,000 sust.)

Range: 1,000/20 Man: 22 tot.

REMARKS: Gunboat version of the class above. In the above hull number series, the "4" numbers have been omitted.

♦ 32 PK "Schoolboy" or "Sea Hawk" class Bldr: Korea SB & Eng.

PK 151 to PK 189 Сневі 51 to Сневі 89



PK 153 - 1/20-mm AA aft, 1/40-mm AA fwd.

D: 70 tons (78 fl) S: 40 kts Dim: 25.7 × 5.4 × 1.2

A: 1/40-mm AA - 1/20-mm AA - 4/12.7-mm mg (II × 2) - 2/7.62-mm mg (I × 2)

M: 2 MTU 16V538 TD90 diesels; 2 props; 5,200 hp Range: 500/20

Man: 25 tot.

REMARKS: Armament varies: recent units (and those refitted) have a Korean-designed 40-mm power-operated mount and three twin Korean-design 12.7-mm mg mounts (see photo of PK 153); early ships had a U.S. Mk 3 40-mm mount forward.

Note: Ex-U.S. Coast Guard "Cape"-class patrol boats PB 3, 5, 6, 8-12 stricken 1984.

MINE WARFARE SHIPS

♦ 0 (+1+...) SK5000-class minehunters Bldr: Kangnam SB

D: . . . S: . . . Dim: . . . × . . . × A: . . . Electron Equipt: Radar: . . . —Sonar: Plessey 193M

M: . . . diesels; 2 Voith-Schneider cycloidal props; . . . hp

REMARKS: Design based on Italian Intermarine Lerici design. First unit scheduled to deliver 12-86. Glass-reinforced plastic construction, with bow-thruster. Will carry Gaymarine Pluto mine-disposal vehicles and is to be equipped with Decca-Racal plotting gear. As many as 10 may ultimately be built.

♦ 5 U.S. MSC-289-class coastal minesweepers geon Bay, Wis.

Bldr: Peterson Bldrs., Stur-

| | In serv. |
|--------------------------------|----------|
| MSC 555 Nam Yang (ex-MSC 295) | 8-63 |
| MSC 556 Ha Dong (ex-MSC 296) | 11-63 |
| MSC 557 SAM KOK (ex-MSC 316) | 7-68 |
| MSC 558 Yong Dong (ex-MSC 320) | 2-10-75 |
| MSC 559 OK CHEON (ex-MSC 321) | 2-10-75 |



Sam Kok (MSC 557) - old pendant number

D: 315 tons (380 fl) S: 14 kts Dim: 44.32 × 8.29 × 2.7

A: 2/20-mm AA (II × 1) M: 4 G.M. 6-71 diesels; 2 props; 1,020 hp

Electric: 1,260 kw Fuel: 33 tons Man: 40 tot.

REMARKS: Wooden construction. Built under Military Aid Program. Gas-turbine sweep generator. Lower superstructure than on the MSC 268 class, below.

• 3 U.S. MSC 268-class coastal minesweepers Terminal Isl., Cal.

Bldr: Harbor Boat Bldg.,

In serv. MSC 551 Kum San (ex-MSC 284) 6-59 MSC 552 Ko Hung (ex-MSC 285) 8-59 MSC 553 Kum Kok (ex-MSC 286) 10-59



Kum San (MSC 551)

D: 320 tons (370 fl) S: 14 kts Dim: 43.0 (41.5 pp) × 7.95 × 2.55

A: 2/20-mm AA (II × 2) Electron Equipt: Radar: Decca 45 - Sonar: UQS -1

M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp Fuel: 40 tons Range: 2,500/16 Man: 40 tot.

Remarks: Built under Military Aid Program. Wooden hulls.

AMPHIBIOUS WARFARE SHIPS

♦ 8 ex-U.S. LST 1 and U.S. LST 542-class landing ships

| Bldr | L | In serv. |
|----------------------------------|--|--|
| Bethlehem, Fore River | 29-3-44 | 25-4-44 |
| Chicago Bridge, Seneca, Ill. | 21-9-43 | 14-10-43 |
| Chicago Bridge, Seneca, Ill. | 20-7-43 | 12-8-43 |
| American Bridge, Pa. | 7-11-43 | 20-12-43 |
| American Bridge, Pa. | 30-12-43 | 16-1-44 |
| Chicago Bridge, Seneca, Ill.* | 17-11-44 | 11-12-44 |
| Dravo, Pittsburgh | 9-12-44 | 28-12-44 |
| Bethleham, Hingham, Mass. | 2-5-45 | 29-5-45 |
| | Bethlehem, Fore River Chicago Bridge, Seneca, Ill. Chicago Bridge, Seneca, Ill. American Bridge, Pa. American Bridge, Pa. Chicago Bridge, Pa. Chicago Bridge, Seneca, Ill. Dravo, Pittsburgh Bethleham, Hingham, | Bethlehem, Fore River Chicago Bridge, Seneca, Ill. Chicago Bridge, Seneca, Ill. Chicago Bridge, Seneca, Ill. American Bridge, Pa. American Bridge, Pa. Chicago Bridge, Seneca, Ill. Chicago Bridge, American Bridge, Pa. Chicago Bridge, Seneca, Ill. Dravo, Pittsburgh 9-12-44 Bethleham, Hingham, 2-5-45 |

D: 1,653 tons (4,080 fl) S: 10 kts Dim: 100.04 × 15.24 × 4.30 A: 8/40-mm AA (II × 2, I × 4) -2/20-mm AA Electric: 300 kw M: 2 G.M. 12-567A or 12-278A diesels; 2 props; 1,800 hp Man: 70 tot.

Remarks: Transferred 1955-58; all purchased outright 15-11-74. LST 1 class had elevators from upper deck to tank deck; later ships had a ramp.

• 7 ex-U.S. LSM 1-class medium landing ships

Bldr: Brown SB, Houston, Tex. (except: LSM 652: Federal SB, Newark, N.J.; LSM 661: Pullman Standard Car Co., Chicago, Ill.)

| | Laid down | L | In serv. |
|-----------------------------|-----------|---------|----------|
| LSM 655 Ko Mun (ex-LSM 30) | 7-5-44 | 28-5-44 | 1-7-44 |
| LSM 656 Pi An (ex-LSM 96) | 15-9-44 | 7-10-44 | 28-10-44 |
| LSM 657 Wol MI (ex-LSM 57) | 30-6-44 | 21-7-44 | 17-8-44 |
| LSM 658 Ki Rin (ex-LSM 19) | 24-4-44 | 14-5-44 | 14-6-44 |
| LSM 659 Nung Ra (ex-LSM 84) | 22-8-44 | 15-9-44 | 7-10-44 |
| LSM 661 SIN MI (ex-LSM 316) | 6-4-44 | 18-6-44 | 21-7-44 |
| LSM 662 UL RUNG (ex-LSM 17) | 10-4-44 | 7-5-44 | 12-6-44 |



Ko Mun (LSM 655) - old number

L. & L. Van Ginderen

D: 520 tons (1,095 fl) S: 13 kts Dim: 62.0 × 10.52 × 2.53 A: 2/40-mm AA (II \times 1) -4/20-mm AA (I \times 4) Electric: 240 kw Fuel: 160 tons

M: 2 Fairbanks-Morse 38D81/6 × 10 diesels; 2 props; 2,880 hp Man: 75 tot.

REMARKS: Pung To has mine rails on the vehicle deck, mine-laying ports through the stern. Sisters Tae Cho (LSM 651, ex-U.S. LSM 546), Tyo To (LSM 652, ex-U.S. LSM 268), and Ka Tok (LSM 653, ex-U.S. LSM 462) stricken 1982. Pung To (ex-LSM 54), with minelaying capability stricken 1984.

Note: Ex-U.S. Navy amphibious fire-support ship Si Hung (ex-St. Joseph River, LSMR 527) reported stricken 1984.

• 6 U.S. LCU 1610-class utility landing craft Bldr: So. Korea (In serv. 1979-81)

MULKAE 72-77

D: 190 tons (390 fl) **S**: 11 kts **Dim**: $41.07 \times 9.07 \times 2.08$

A: 4/20-mm AA (II \times 2)

M: 4 G.M. 6-71 diesels; 2 Kort-nozzle props; 1,200 hp

Fuel: 13 tons Range: 1,200/11 Man: 6 tot.

Remarks: Cargo capacity: 143 tons; cargo deck 30.5 × 5.5. Copies of U.S. design with higher pilothouse; built with imported equipment.

♦ 1 LCU 501-class utility landing craft Bldr: Bison SB. Buffalo, N.Y.

Mulkae 71 (ex-U.S. LCU 531) (L: 5-9-43)

D: 309 tons (fl) S: 10 kts Dim: 36.3 × 10.0 × 1.14 A: 2/20-mm AA (I × 2) M: 3 Gray Marine 6-71 diesels; 2 props; 675 hp Man: 12 tot.

Remarks: Transferred 1960.

♦ 10 ex-U.S. Army LCM(8)-class landing craft

D: 95-115 tons (fl) S: 9-12 kts Dim: 22.7 × 6.4 × 1.4 M: 4 G.M. 6-71 diesels; 2 props; 600 hp

Remarks: Transferred 9-78.

Note: South Korea also builds glass-reinforced plastic-hulled versions of the U.S. LCVP landing craft.

AUXILIARIES

♦ 2 ex-U.S. Tonti-class gasoline tankers Bldr: Todd SB, Houston, Tex.

| | L | In serv. |
|--|--------|----------|
| AO 55 N (ex-Rincon, T-AOG 77, ex-Tarland) | 5-1-45 | 10-45 |
| AO 56 N (ex-Petaluma, T-AOG 79, ex-Raccoon Bend) | 9-8-45 | 11-45 |

D: 2,100 tons (6,047 fl) S: 10 kts Dim: 99.1

M: 2 Nordberg diesels; 1 prop; 1,400 hp Electric: 515 kw

Fuel: 154 tons Range: 6,000/10 Man: 41 tot.

Remarks: 3,160 grt/3,933 dwt. Cargo 31,284 bbl. light fuels (diesel, JP-5 gasoline). Acquired from Maritime Commission by U.S. Navy 1-7-50 and 7-9-50, respectively. Leased 21-2-82. Will probably be armed.

• 1 ex-Norwegian oiler Bldr: Bergens Mekanske Verksteder, Norway (In serv. 1951)

AO 2 CHUN JI (ex-Birk)

D: 1,400 tons (4,160 fl) S: 12 kts Dim: 90.65 (84.0 pp) × 13.56 × 5.35

A: 1/40-mm AA - 2/20-mm AA

M: 1 Sulzer 6 TD 48 diesel; 1 prop; 1,800 hp Man: 73 tot.

Remarks: Bought in 1953. The Puchon of the same class was lost 5-71. Can replenish alongside while underway.

2 ex-U.S. 174-foot class tankers

| | Bldr | L | In serv. |
|---------------------------|---------------------------|----------|----------|
| YO 1 Ku Kyong (ex-YO 118) | R.T.C. SB, Camden, N.J. | 6-5-44 | 8-8-44 |
| YO 6 N (ex-YO 179) | Smith SY, Pensacola, Fla. | 24-11-44 | 26-5-45 |

D: 1,400 tons (fl) S: 7 kts Dim: 53.0 × 10.0 × 4.0

M: 1 Union diesel; 1 prop; 560 hp Fuel: 25 tons Man: 36 tot.

Remarks: YO 1 transferred 1946, YO 6 in 9-71. Cargo: 900 tons.

♦ 1 ex-U.S. YO 55 class tanker Bldr: R.T.C. SB, Camden, N.J.

Laid down T. In serv. Hwa Chon (ex-Derrick, YO 59) 15-6-42 21-11-42 2-2-43

D: 800 tons (2,700 fl) S: 10 kts Dim: 71.65 × 11.3 × 4.8

M: 2 Fairbanks-Morse 37E14-5 diesels; 2 props; 1,150 hp Electric: 160 kw Fuel: 105 tons Range: 4,600/8 Man: 46 tot.

Remarks: Transferred 4-55. Cargo: 1,600 tons.

Note: The last serving ex-U.S. Army FS 331-class small cargo ship, Ma San (AKL 909, ex-U.S. AKL 35, ex-Lt. Thomas W. Weigle, FS 383) was stricken during 1984.

Bldr: Basalt Rock Co., Napa, Cal. ◆ 2 ex-U.S. Diver-class salvage ships

| | Laid down | L | In serv. |
|-------------------------------------|-----------|---------|----------|
| ARS 26 CHANG WON (ex-Grasp, ARS 24) | 27-4-43 | 31-7-43 | 22-8-44 |
| ARS 27 Cut I (av. Deliner ARS 23) | 2-4-43 | 25-9-43 | 18-7-44 |

D: 1,530 tons (1,970 fl) S: 14.8 kts Dim: 65.1 × 12.5 × 4.0

A: 2/20-mm AA Electron Equipt: Radar: 1/SPS-53

M: 4 Cooper-Bessemer GSB 8 diesels; electric drive; 2 props; 2,440 hp

Electric: 460 kw Fuel: 300 tons Range: 9,000/14; 20,000/7 Man: 83 tot.

Remarks: ARS 5 transferred 31-3-78; ARS 6 on 15-8-79, both by sale. Equipped for salvage, diver support, and towing.

2 U.S. Sotoyomo-class auxiliary tugs

Laid down L In serv. Gulfport Boiler Wks, 26-10-44 ATA 3 Do Bang 14-12-44 10-2-45 (ex-Pinola, ATA 206) Port Arthur, Tex. 17-1-45 19-3-45 ATA 2 Yong Mun 14-12-44 Levingston, SB, (ex-Keosangua, ATA 198) Orange, Tex.

D: 835 tons (fl) S: 13 kts Dim: 43.6 (40.7 pp) × 10.3 × 4.0

A: 1/76-mm Mk 22 DP - 4/20-mm AA (II × 2)

M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp

Electric: 120 kw Fuel: 158 tons Man: 45 tot.

REMARKS: Transferred 2-62. ATA 3 is used in salvage work. There are also about nine harbor tugs, including YTL 13 (ex-U.S.N. YTL 550), YTL 22 (ex-Army ST 2097), YTL 23 (ex-Army ST 2099), YTL 25 (ex-Army YT 2106), YTL 26 (ex-Army ST 2065), and YTL 30 (ex-Army ST 2101). All transferred 1968-72.

Note: There are also about 35 yard and service craft.

KOREAN HYDROGRAPHIC SERVICE Subordinate to the Ministry of Transport.

2 ex-Belgian Herstal-class inshore minesweepers

Suro 5 (ex-Temse, ex-MSI 470) 6-8-56 Suro 6 (ex-Tournai, ex-MSI 481) 18-5-57

D: 160 tons (190 fl) S: 15 kts Dim: 34.5 × 6.6 × 2.1

M: 2 diesels; 2 props; 630 hp Range: 2,300/10 Man: 10 tot.

Remarks: Built in Belgium with U.S. funds. Transferred 3-70. Wooden hulls.

KOREA-SOUTH (continued) KOREAN HYDROGRAPHIC SERVICE (continued)

• 1 ex-U.S. YMS-1-class minesweeper

Suro 3 (ex-U.S. Coast Geodetic Survey Hodgson)

D: 289 tons (fl) S: 15 kts Dim: 44.6 × 8.1 × 3.0 M: 2 G.M. 8-268 diesels; 2 props; 1,000 hp

Remarks: Converted post-World War II as a coastal survey ship. Wooden hull. Launched 1943, transferred 1968.

• 3 inshore survey craft

Suro 7, Suro 8: 30 tons Suro 2: 145 tons

COAST GUARD

The Republic of Korea Coast Guard operates about 25 seagoing patrol boats and several hundred small craft. Several new classes have been built, in unknown numbers:

♦ 1 (or more) HDP 1000-class patrol ships

Bldr: Korea SB & Eng., Pusan



HDP 1000 class

Korea SB & Eng.

D: 1,200 tons (1,450 fl) S: 21.5 kts Dim: 80.50 × 8.90 × 3.15

A: 1/40-mm Mk 3 AA - 2/20-mm AA (I × 2)

Electron Equipt: Radar: 2/navigational

M: 2 SEMT-Pielstick 12 PA6-280 diesels; 2 props; 9,600 hp

Electric: . . . Range: 7,000/18 Man: 11 officers, 58 men

Remarks: A lower-powered and more lightly armed version of the An Yang Ho-class frigates built for the Navy. Passive-tank stabilization system. First (and possibly only) unit completed about 1982. Engines built in Japan under license.

♦ 3 "Sea Whale"-class patrol boats

| | Bldr | In serv |
|-----|--------------------------|---------|
| 505 | Korea SB & Eng., Pusan | 3-80 |
| 5 | Korea-Tacoma SY, Chinhae | 5-79 |
| 5 | Korea-Tacoma SY, Chinhae | 7-82 |



"Sea Whale/Sea Dragon" class

Korea-Tacoma

D: 410 tons (580 fl) S: 24 kts Dim: 60.8 × 8.0 × 2.29 A: 1/40-mm AA — 2/20-mm AA — 2/7.62-mm mg (I × 2)

M: 2 MTU diesels; 2 props; 9,600 hp

Range: 1,500/25; 2,400/20 Man: 11 officers, 28 men

Remarks: Intended for rescue and inspection duties. Flume-type passive tank roll stabilization. 4 "Sea Shark"-class patrol boats SB. Bldr: Hyundai SB and Korea Tacoma



"Sea Shark/Sea Wolf" class

Hyundai



"Sea Shark/Sea Wolf" class

Korea-Tacoma

D: 250 tons (280 fl) **S:** 28 kts **Dim:** $48.2 \times 7.1 \times 2.1$ (2.5 over props)

A: 4/20-mm AA (II × 2 or II × 1, I × 2) - 2/12.7-mm mg

M: 2 diesels; 2 props; 7,320 hp

Range: 3,300/15 Man: 5 officers, 24 men

Remarks: Some have a raised platform aft. Also offered as the "Sea Wolf" design by Korea-Tacoma SB. Range also given as 2,000 n.m. at 17 kts.

♦ . . . "Sea Gull" class Bldr: Korea SB & Eng.

D: 80 tons S: 30 kts Dim: 24.0 × 5.5 × . . .

A: . . . M: 2 diesels; 2 props; 3,920 hp

Range: 950/20 Man: 18 tot.

. . . "Swallow" class, glass-reinforced plastic construction

D: 32 tons (fl) S: 25 tons Dim: 20.0 × 4.7 × 1.3 A: 1/12.7-mm mg — 1/7.62-mm mg Range: 500/20

M: 2 G.M. 12V71 TI diesels; 2 props; 1,060 hp Man: 8 tot.

KUWAIT

State of Kuwait

Personnel (1984): Approx. 1,000 tot.

Merchant Marine (1984): 250 ships - 2,551,074 grt

Laid down

(tankers: 28 ships - 1,435,363 grt)

Naval Aviation: Six Aerospatiale AS.332F Super Puma helicopters armed with AM 39 Exocet missiles were ordered from France in 1983.

L

GUIDED-MISSILE PATROL BOATS

♦ 2 FPB 57 class

Bldr: Lürssen, Bremen-Vegesack, West Germany

ADDIT

In serv. 8-83

P 5702 AL MUBAREKI P 5704 SABHAN

. . . 9-8-84

GUIDED-MISSILE PATROL BOATS (continued)



Sabhan (P 5704)

French Navy, 7-84

D: 353 tons (398 fl) S: 36 kts Dim: 58.10 (54.40 wl) × 7.62 × 2.83

A: 4/MM 40 Exocet (II × 2) - 1/76-mm OTO Melara DP - 2/40-mm Breda AA $(II \times 1) - 2/7.62$ -mm mg-mines

Electron Equipt: Radar: 1/Decca 1226, 1/9LV200 search, 1/9LV228 director, 1/Marconi S810

EW: MEL Matilda, 1/Dagaie chaff RL

M: 4 MTU 16V956 TB91 diesels; 4 props; 18,000 hp

Electric: 405 kVA Range: 700/35 Man: 4 officers, 35 men

REMARKS: Ordered 1980. Function as leaders for the six TNC-45 class. Scheduled completion dates were 11-82 and 4-83. Marconi S810 search radar is in radome aft, Dagaie launcher and optical director for the 40-mm gunmount are amidships.

Bldr: Lürssen, Bremen-Vegesack, West Germany ♦ 6 TNC-45 class

| | L | In serv. | | L | In serv. |
|--------------------------------------|------|----------|--|-------|----------|
| P 4501 AL BOOM (ex-Wer- jiya) | 3-82 | 8-82 | P 4507 AL Sa'Dani (ex- Istiqlal) | 12-82 | 9-8-84 |
| P 4503 AL BETTEEL (ex-Ma- shuwah) | 4-82 | 9-82 | P 4509 AL AHMADI | | 9-8-84 |
| P 4505 AL SANBOUK (ex-Jal- boot) | | 10-82 | P 4511 AL ISTIQLAL (ex-Al Mubareki) | | 9-8-84 |



Al Ahmadi (P 4509)

French Navy, 7-84

D: 231 tons (259 fl) S: 41.5 kts Dim: 44.90 (42.30 wl) × 7.00 × 2.40 A: 4/MM 40 Exocet - 1/76-mm OTO Melara DP - 2/40-mm Breda AA (II × 1) -2/7.62-mm mg (I × 2)

Electron Equipt: Radar: 1/Decca 1226, 1 PEAB/9LV200 search, 1 PEAB/9LV200 director

EW: MEL Matilda-intercept, 1 Dagaie chaff RL

M: 4 MTU 16V538 TB 92 diesels; 4 props; 15,600 hp (15,000 sust.) Electric: 405 kw Range: 500/38.5; 1,500/16 Man: 5 officers, 27 men

Remarks: Ordered 1980. Carry 250 rounds 76-mm, 1,800 rounds 40-mm ammunition. Have CSEE Lynx optronic gun director for the 40-mm mount. Philips 9LV200 system for the 76-mm gun and missiles, and a flare rocket launcher amidships. First three accepted 26-4-84.

PATROL CRAFT

 4 "Sea Gull" class Bldr: Korea SB & Eng., Okpo (In serv. 1985-86)

D: 80 tons S: 30 kts Dim: 24.0 × 5.5 × . . . A: . . . M: 2 diesels; 2 props; 3,920 hp

Range: 950/20 Man: 18 tot.

Remarks: Ordered 1985. Aluminum construction.

· 8 coastal patrol boats Bldrs: Thornycroft, Woolston; first 2: Vosper Thornycroft

L L L 1972 MAYMOON 4-68 AL SHURTI Mashhoor 1969 WATHAH 1970 3-68 MARZOOK 1969 MURSHED 1970 1972 AMAN INTISAR

D: 40 tons S: 20 kts Dim: 27.78 × 4.73 × 1.38 Electron Equipt: Radar: Decca 202 Man: 5 officers, 7 men M: 2 Rolls-Royce 8-cyl. diesels; 2 props; 1,340 hp Range: 700/15

♦ 5 56-foot boats Bldr: Vosper Thornycroft Private, Ltd., Singapore

DASTOOR KASAR QAHIR SAGAR SALAM

D: 25 tons (fl) S: 29-30 kts Dim: 17.1 × 4.9 × . .

A: 2/7.62-mm mg (I × 2) M: 2 MTU 6V331 diesels; 2 props; 1,350 hp Range: 320/20 Man: 2 officers, 6 men

Remarks: Steel hull, aluminum superstructure. First two ordered 9-73, in service 6-74; others ordered 1978, in service 1979.

 1 U.S. Cutlass class Bldr: Halter Marine, New Orleans, La.

DHAHER (In serv. 6-8-79)

D: 34 tons (fl) S: 32 kts Dim: 19.66 × 5.18 × 1.12

A: 2/12.7-mm mg (I × 2) Man: 15 tot.

M: 2 MTU 8V 331 TB92 diesels; 2 props; 1,730 hp

Bldr: Vosper Thornycroft Private, Ltd., Singapore 14 36-foot boats

AL SERBAH ANTAR AL SALMI II ISTIQUAL II QARAH WARBAH - plus 8 unnamed



Warbah

Vosper, 1972

D: 6.8 tons (fl) S: 22 kts Dim: 11.1 × 3.3 × 0.6 Man: 4 tot. A: 4/7.62-mm mg (II × 2) M: 2 Sabre 210 diesels; 2 props; 420 hp

REMARKS: First four, in service 1972, and second four, in service 5-73, have no names. Wooden construction, nylon sheathed hulls.

Bldr: Magnum Marine, U.S.A. 27 Magnum Sedan class

D: . . . S: 60 kts Dim: 8.3 × 2.4 × 0.7 Range: 200/. . M: 2 Mercury Mercruiser inboard/outboard motors; 2 props; 660 hp

REMARKS: High-speed craft for inshore work. Three delivered 1977, one in 1978, three in 1979. Twenty more ordered 6-84. Glass-reinforced plastic construction.

Bldr: Thornycroft Ltd., Singapore (In serv. 1-76) ♦ 1 46-foot craft

MAHROOS

D: 21.5 tons (fl) S: 21.7 kts Dim: 14.1 × 4.5 × . . . Man: 1 officer, 4 men A: 2/7.62-mm mg M: 2 Rolls-Royce C8M-410 diesels; 2 props; 780 hp

♦ 7 50-foot craft Bldr: Thornycroft Ltd., Singapore (In serv. 1957-58)

MINE COUNTERMEASURES SHIPS

Note: Kuwait plans to add mine countermeasures units to its fleet and was holding discussions with Netherlands representatives during 11-84 over possibly ordering 4 units of the Alkmaar ("Tripartite") class.

AUXILIARIES

Bldr: British Hovercraft, Cowes, U.K. • 6 SR.N6 Mk 8 hovercraft

D: 17 tons (fl) S: 50-55 kts Dim: 18.3 × 8.5 × . M: 1 Rolls-Royce Gnome gas turbine; 1 airscrew, 1 lift fan; 1,060 hp

Range: 300 to 550 n.m./50-55 kts

Remarks: Ordered 1981. Can carry two 450-liter fuel cells on deck to increase range. Primarily for logistics support.

 4 Loadmaster Mk II logistics support landing craft Bldr: Fairey Marine, Cowes, U.K. (In serv. 1984-85)

D: 175 tons light (350 normal/420 fl) S: 10.5 kts (10.0 sust.)

Dim: 33.00 (30.00 pp) × 10.20 × 1.75

A: None Electron Equipt: Radar: 1/Decca nav.

KUWAIT (continued) AUXILIARIES (continued)



Kuwaiti Loadmaster on trials

Fairey Marine, 1984

M: 2 Caterpillar 3412 DITA (V-12) diesels; 2 Kort-nozzle props; 1,214 hp (1,010

Range: 1,000/10 Electric: 72 kw Fuel: 30 tons Man: 1 officer, 6 men

Remarks: Ordered 1983. First pair completed 10-84. Cargo includes 150 tons on deck or 90 tons on deck and 60 tons liquid cargo. Can accommodate 2/60-ton tanks. Original design by Cheverton, taken over by Fairey in 1984.

Bldr: Vosper Private, Ltd., Singapore (In 3 logistics support landing craft serv. 1979-80)

AL JAHRA CERIFF HADIYA

D: 320 tons (fl) S: 9.5 kts Dim: 32.3 × 7.5 × . .

M: 2 Rolls-Royce C8M-410 diesels; 2 props; 750 hp Range: 1,500/9

Remarks: Unusual in having landing ramp at stern. Have full forecastle bow, low fantail like oilfield supply boats. Cargo: 170 tons, 100m2 deck space. Carry 47 tons water ballast.

• 3 landing craft Bldr: Vosper Thornycroft Private Ltd., Singapore

FAREED (In serv. 11-75) WAHEED (In serv. 5-71) REGGA (In serv. 5-71)

D: 88 tons (170 fl) S: 10 kts Dim: 27.0 × 6.9 × . .

M: 2 Rolls-Royce C8M-410 diesels; 752 hp Range: 1,500/9 Man: 8 tot.

Remarks: Carry 40 tons deck cargo, 24.4 m3 cargo fuel, and 35.6 m3 water.

 2 fireboat tugs Bldr: Fairey Marine, Cowes, U.K. (In serv. 11-6-84)

AL HANGAF

D: 67 tons (76 fl) S: 12 kts Dim: 21.00 (19.50 pp) × 5.90 × 2.15

M: 2 Caterpillar 3412 DITA (V-12) diesels; 2 props; 1,214 hp Electric: 72 kw

Remarks: Ordered 1983. Carry 1,000 liters firefighting foam and have a 4,500 l/min. firefighting monitor. Have 9.5-ton bollard pull. Can carry 50 deck passengers.

♦ 1 fireboat Bldr: Vosper Thornycroft Private, Ltd., Singapore (In serv. 1978)

WAHEED

D: 112.6 grt S: 26.6 kts Dim: 26.2 × 5.8 × . . . M: 2 diesels; 2 props; 2,200 hp Man: 16 tot.

• 6 utility launches Bldr: Fairey Marine, Cowes, U.K. (In serv. 11-6-84)

D: 3.3 tons (fl) S: . . . Dim: 8.23 × 2.74 × 0.84

M: 1 or 2 Perkins 4.236 diesel(s); 1/2 props; 72/144 hp Man: 3 tot.

REMARKS: Four have 1 diesel, can carry 2 tons of cargo or 20 passengers. Two have 2 diesels, displace 3.8 tons, and can carry 1.5 tons cargo or 13 passengers. Glass-reinforced plastic construction. Ordered 1983.

LEBANON

Republic of Lebanon

Personnel: Approx. 200 men

MERCHANT MARINE (1984): 251 ships - 458,000 grt

(tankers: 4 ships-15,678 grt)

PATROL BOATS

Note: Semi-independent Christian forces have operated five Dabur-class patrol craft, transferred by Israel in 1976; for characteristics, see Israel section.

1 Tarablous class

Bldr: Chantiers Navals de l'Estèrel, Cannes (L: 6-59)

TARABLOUS



Tarablous

1959

D: 105 tons (fl) S: 27 kts Dim: 38.0 × 5.5 × 1.75

A: 2/40-mm AA (I × 2) M: 2 Mercedes-Benz diesels; 2 props; 2,700 hp

Range: 1,500 Man: 3 officers, 16 men

Remarks: Wooden construction. In poor condition.

PATROL CRAFT

Fairey Allday Marine, Hamble, U.K. • 2 Tracker Mk II class

N. (In serv. 28-1-80) N. (In serv. 8-2-80)

D: 31.5 tons (fl) S: 29 kts Dim: 19.25 × 4.98 × 1.45 A: . . . M: 2 G.M. 12V71 TI diesels; 2 props; 990 hp

Range: 650/20 Man: 11 tot.

Remarks: Intended primarily for customs service. One under Christian Militia control since 1983.

• 6 Aztec class Bldr: Crestitalia, Ameglia, La Spezia, Italy (In serv. 1980)

CF 1001 to CF 1006

D: . . . S: . . . Dim: 9.0 × . . . × . . .

M: 2 diesels; 2 props; . . . hp

Remarks: Glass-reinforced plastic construction.

AMPHIBIOUS SHIPS

♦ 2 French EDIC-III class Bldr: SFCN, Villeneuve-la-Garenne

Sour (In serv. 1-85) DAMOUR (L: 11-12-84)

D: 375 tons (712 fl) S: 10 kts Dim: 59.00 (57.00 pp) × 11.90 × 1.67 (1.10 light)

A: 2/20-mm AA (I × 2) - 1/81-mm mortar Electron Equipt: Radar: 1/ . . . nav.

M: 2 SACM MGO 175-V12-A diesels; 2 props; 1,040 hp

Range: 1,800/10 Fuel: 35 tons Man: 18 crew + 33 troops

REMARKS: Ordered 30-7-83 as aid from the French government. Sour replaced an earlier EDIC (L 9096) of the same name and loaned in 11-83. Can carry 11 trucks or 5 armored personnel carriers.

LIBERIA

Personnel (1984): 445 total

Merchant Marine (1984): 1,934 ships - 62,024,700 grt

(tankers: 722 ships -41,487,497 grt)

NAVAL AVIATION: One Cessna 337 is operated by the Coast Guard for surveillance.

COAST GUARD

PATROL CRAFT

• 3 CG 27 class Bldr: Karlskrona Varvet, Sweden (In serv. 27-9-80)

8801 MASTER SERGEANT SAMUEL K. DOE (ex-Nuah River)

8802 Albert Porte (ex-. . .)

8803 GENERAL THOMAS QUIWOUKPA (ex-. . .)

D: 50 tons S: 25 kts Dim: 26.72 × 5.23 × 1.13

A: 1/12.7-mm mg - 2/7.62-mm mg (I × 2)

Electron Equipt: Radar: 1/Decca 1226C

M: 2 MTU 8V331 TC82 diesels; 2 props; 1,866 hp Fuel: 11 tons Range: 1,000/18 Man: 8 tot.

REMARKS: Aluminum alloy construction. Names changed due to revolution; all originally named for rivers. Same design as Swedish Coast Guard TV 102.

LIBERIA (continued) PATROL CRAFT (continued)



Master Sergeant Samuel K. Doe (8801)

♦ 2 U.S. 65-foot class

Bldr: Swiftships, Morgan City, La. (In serv. 22-7-76)

103 CAVILLA 104 Mano

D: 38 tons (fl) S: 24 kts Dim: 19.8 × 5.8 × 0.8

A: 1/81-mm mortar combined with 12.7-mm mg - 2/12.7-mm mg (I × 2)

M: 2 G.M. 12V71 TI diesels; 2 props; 1,920 hp Range: 600/21.5 Man: 2 officers, 18 men

• 1 U.S. 42-foot class

Bldr: Swiftships, Morgan City, La. (In serv. 22-7-76)

101 St. Paul

D: 11 tons (12 fl) S: 20 kts Dim: 12.8 × 3.7 × 0.6

A: 2/12.7-mm mg (I × 2)

M: 2 G.M. 8V71 diesels; 2 props; 870 hp Man: 4 tot.

LIBYA

Socialist People's Libyan Arab Jamahiriya

Personnel: Approximately 3,000-4,000 men

MERCHANT MARINE (1984): 105 ships - 854,700 grt

(tankers: 16 ships - 748,204 grt)

NAVAL AVIATION: About 18 Soviet-supplied Mi-14 Haze, 6 French-supplied Super Frélon (with AM 39 Exocet anti-ship missiles and 25 ASW torpedoes), and 12 French Aloutte-III helicopters are in service for naval use.

SUBMARINES

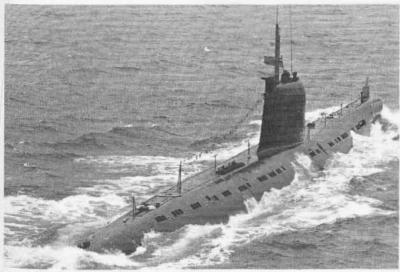
Note: Two coastal submarines may have been ordered during 1982 in Yugoslavia, which has already delivered 6 Mala-class 2-man midget subs to Libya (2 in 1977, and 4 in 1981-82).

• 6 Soviet Foxtrot class

Bldr: Sudomekh SY, Leningrad

311 AL BADR 312 AL FATEH 314 AL MITRAQAH 313 AL AHAD

315 AL KHYBER 316 AL HUNAYN



Al Ahad (313)

1978

D: 1,950/2,400 tons S: 18/16 kts Dim: $96.0 \times 7.5 \times 6.0$ A: 10/533-mm TT (6 fwd, 4 aft) — 22 torpedoes or 44 mines

Electron Equipt: Radar: Snoop Tray

Sonar: 1 med.-freq. active, passive arrays M: 3 diesels, electric motors; 3 props; 5,300 hp Endurance: 70 days Range: 11,000/8 (snorkel) Man: 8 officers, 70 men

Remarks: One transferred in 12-76, two in 1978, fourth commissioned 30-3-81 at Tripoli, fifth delivered 2-82, and sixth in 3-83.

FRIGATES

• 0 (+2) Soviet Koni class

Bldr: Zelenodolsk SY

N. N.

D: 1,900 tons (fl) S: 27 tons Dim: 95.0 × 12.8 × 4.2 (hull)

A: 1/SAN-4 system (II × 1, 20 missiles) - 4/76.2-mm DP (II × 2) - 4/30-mm AA (II \times 2) - 2/RBU-6000 ASW RL (XII \times 2) - 2/d.c. racks - mines Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Pop Group, 1/Hawk

Screech, 1/Drum Tilt

Sonar: 1 med-freq. hull-mounted EW: 2/Watch Dog, 1/chaff RL (XVI × 2)

M: 1 gas turbine of 15,000 hp, 2 diesels of 7,500 hp; 3 props; 30,000 hp Range: 1,800/14

Remarks: Part of the arms package that included the 4 Nanuchka II missile corvettes. Will probably be delivered in the tropical variant with a long deckhouse amidships housing air-conditioned equipment. The depth-charge racks (10 charges each) bolt to the mine rails. Very limited endurance and obsolescent equipment limits their potential utility. Delivery still anticipated, possibly in 1986-87.

Note: A training frigate, similar to those built for Indonesia and Iraq, may have been ordered in Yugoslavia during 1982.

1 Vosper Mk 7

Bldr: Vosper Thornycroft, Woolston, U.K.

F 211 DAT ASSAWARI

27-9-68

Laid down In serv. L 9-69 1 - 2 - 73



Dat Assawari (F 211) - on trials

C. Martinelli, 5-84

D: 1,325 tons (1,650 fl) S: 37/17 kts Dim: 101.6 (94.5 pp) × 11.08 × 3.36 A: 4/Otomat Mk 2 SSM (I × 4) — 1/114-mm Mk 8 DP — 1/Albatros Mk 2 SAM syst. (IV × 1; Aspide missiles) — 2/40-mm AA (I × 2) — 2/35-mm Oerlikon AA (II \times 1) - 6/324-mm ILAS-3 ASW TT (III \times 2)

Electron Equipt: Radar: 1/RAN-10S, 1/RAN-12, 1/navigational, 2/Orion RTN-10X

Sonar: 1/Diodon (TSM 2310)

EW: Decca RDS-1, Selenia INS-1 passive, U.K. FH-12 HFD/F

M: CODOG: 2 Rolls-Royce TM 2A Olympus gas turbines, 24,000 hp each; 2 Paxman Ventura diesels, 1,900 hp each; 2 CP props

Fuel: 300 tons Range: 1,000/36; 5,700/17 Man: 132 tot.

Remarks: Began refitting in Italy, 1979; damaged by bomb 29-10-80. Ran trials in 3-83 and recommissioned 1-10-83, but did not return to Libya until 6-85. Sea Cat SAM and Limbo ASW mortar replaced by 4-cell Albatros launcher and ASW TT for A244 torpedoes. Received Selenia RAN-12L/X (IPN-10) combat data system. Otomat, new radars, sonar added. Has two NA-10 Mod. 2 gun/missile f.c.s.

CORVETTES

4 Soviet Nanuchka II class

Bldr: Petrovskiy SY, Leningrad

416 TARIQ IBN ZIYAD (ex-Ain Mara) (In serv. 10-81)

418 N. (ex-Ain Zaara) (In serv. 10-83)

417 N. (ex-Ain al Gazala) (In serv. 7-2-83)

419 N. (ex-Ain Zaquit) (In serv. 8-85)

D: 770 tons (fl) S: 32 kts Dim: 59.3 × 12.6 × 2.4

A: 4/SS-N-2c Styx SSM (II × 2) - 1/SA-N-4 system (II × 1, 20 missiles) -2/57-mm AA (II × 2)

Electron Equipt: Radar: 1/Don-2, 1/Square Tie (in Band Stand radome), 1/Pop Group, 1/Muff Cob

EW: 1/Bell Tap passive array, 2/chaff RL (XVI × 2)

M: 3 M507 diesels; 3 props; 24,000 hp Man: 60 tot.

Range: 900/30; 2500/12 (1 engine)

REMARKS: Reason for slow delivery rate unknown. Considered to be poor sea boars by some customers, with unreliable propulsion plants (M507 is a double M503, 42-c/linder radial engine).

CORVETTES (continued)



Tariq Ibn Ziyad (416)

U.S. Navy, 10-81



Ex-Ain Al Gazala (417)

P. Voss, 1-83

• 4 Wadi M'ragh class Bldr: CNR, Riva Trigoso, Italy

| | L | In serv. |
|--|----------|----------|
| C 412 Assad Al Bihar (ex-Wadi M'ragh) | 29-4-77 | 14-9-77 |
| C 413 Assad Al Tougour (ex-Wadi Majer) | 20-4-78 | 12-2-80 |
| C 414 Assad Al Kalij (ex-Wadi Mercit) | 15-12-78 | 28-3-81 |
| C 415 Assad Al Hudud (ex-Wadi Megrawa) | 21-6-79 | 28-3-81 |



Assad Al Bihar

CNR, 1979



Assad Al Bihar - on trials

CNR, 1979

 D: 547 tons (630 fl)
 S: 34 kts
 Dim: 61.7 (57.8 pp) × 9.3 × 2.7
 A: 4/Otomat Mk I SSM—1/76-mm OTO Melara DP—2/35-mm Oerlikon AA (II × 1) -- 6/324-mm ASW TT (III × 2) -- 16 mines

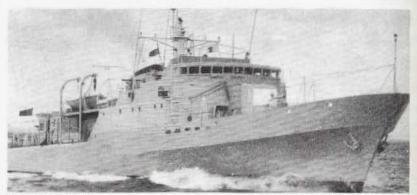
Electron Equipt: Radar: 1/RAN 11 L/X, 1/Decca TM 1226, 1/Orion RTN-10X Sonar: Thomson-CSF Diodon EW: Selenia INS-1 intercept

M: 4 MTU 16V956 TB91 diesels; 4 CP props; 16,400 hp Electric: 650 kw Fuel: 126 tons Range: 1,400/33; 4,150/18 Man: 58 tot.

Remarks: Ordered in 1974. Completion delayed by prolonged trials. Have fin stabilizers, automatic degaussing system, Selenia IPN-10 combat data system, 1/NA 10 Mod. 3 GFCS, with 2C03 optical backup director. Can maintain 31.5 kts sea speed. Names changed 1981. Poorly maintained.

• 1 Vosper Mk 1B

| | Bldr | L | In serv. | |
|--------------|--------------------------|---------|----------|--|
| С 411 Товкик | Vosper, Ltd., Portsmouth | 29-7-65 | 20-4-66 | |



Tobruk (C 411)

Shbldg. And Shipping Record, 1966

D: 440 tons (500 fl) **S:** 18 kts **Dim:** 53.95 (48.77 pp) \times 8.68 \times 4.0 **A:** 1/102-mm - 4.40-mm AA (I \times 4) **Range:** 2,900/14 **Man:** 5 officers, 58 men

M: 2 Paxman Ventura YJCM diesels; 2 props; 3,800 hp Fuel: 60 tons

Remarks: Launched in 1965. Anti-rolling devices, air-conditioned living spaces. No ASW equipment. Can be used as a yacht. Low muzzle velocity, 102-mm gun has low-angle elevation only. Refitted and modernized at Taskizak Naval Shipyard, Turkey, during 1983-84.

GUIDED-MISSILE PATROL BOATS

♦ 0 (+4) Type 400 class Bldr: Kraljevica SY, Yugoslavia

D: 385 tons (525 fl) S: 34 kts Dim: 54.80 (51.88 pp) × 8.96 (8.16 wl) × 2.46 A: 4/SS-N-2C Styx (I × 4) - 1/76-mm OTO Melara Compact DP - 2/40-mm Breda Dardo AA (II \times 1) — 2/20-mm AA (I \times 2) — 2/7.62-mm mg (I \times 2)

Electron Equipt: Radar: . . . M: 4 MTU 20V538 TB92 diesels; 4 props; 1,400 hp

Range: . . . Endurance: 15 days Man: . . .

REMARKS: Ordered 12-84 or 1-85. Have chaff rocket launchers on the 76-mm gunmount. Draft given is at 455-ton normal displacement.

◆ 10 French Combattante-II class Bldr: CMN, Cherbourg

| | Laid down | L | In serv. |
|----------------------------------|-----------|----------|----------|
| 518 Sharara (ex-Beir Grassa) | 13-3-78 | 28-6-79 | 9-2-82 |
| 522 Shehab (ex-Beir Gzir) | 10-6-78 | 22-1-80 | 4-3-82 |
| 524 Wahg (ex-Beir Gtifa) | 30-1-79 | 20-5-80 | 29-5-82 |
| 526 Waheed (ex-Beir Glulud) | 20-10-79 | 30-9-80 | 8-9-82 |
| 528 Shouaiai (ex-Beir Algandula) | 12-9-79 | 14-1-81 | 2-11-82 |
| 532 Shoula (ex-Beir Alkitat) | 17-12-79 | 3-81 | 29-10-82 |
| 534 Shafak (ex-Beir Alkirim) | 11-3-80 | 23-6-81 | 17-12-82 |
| 536 Bark (ex-Beir Alkardmen) | 9-6-80 | 6-10-81 | 11-3-83 |
| 538 Rad (ex-Beir Alkur) | 20-10-80 | 30-11-81 | 19-5-83 |
| 542 Laheeb (ex-Beir Alkuesat) | 20-1-81 | 9-1-82 | 29-7-83 |



Waheed (526)

Ceclant/Premar, 4-82

GUIDED-MISSILE PATROL BOATS (continued)



Waheed (526) - with old name

French Navy: Ceclant/Premar, 4-82

D: 258 tons (311 fl) S: 39 kts Dim: 49.0 (46.2 pp) × 7.1 × 2.4 (2.0 hull) A: 4/Otomat SSM (II × 2) -1/76-mm OTO Melara DP -2/40-mm Breda/ Bofors AA

Electron Equipt: Radar: 1/Triton search, 1/Castor tracking, 1/Vega II fire-control (all Thomson-CSF)

M: 4 MTU 20V538 TB91 diesels; 4 props; 18,000 hp Range: 1,600/15 Man: 8 officers, 19 men

Remarks: Ordered 5-77. Delivery of first three embargoed 2-81 to 12-81. Names changed 1983. Delivery of final unit embargoed until 2-1-84.

♦ 12 Soviet Osa-II class

205 AL KATUM 209 AL NABHAR 956 AL ZUARA 206 AL O'WAKH 210 AL FIKAR . . . AL MWASH 207 AL RWAE 952 AL SAFHAA AL BTAR 208 AL BAIDA 954 AL ZAKAB . . . AL SIDD



Libyan Osa-II

1978

Note: Hull numbers are in Arabic script to starboard, Western to port.

D: 210 tons (240 fl) **S:** 34 kts **Dim:** $38.6 \times 7.6 \times 2.0$ A: 4/SS-N-2 Styx SSM (I × 4) - 4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

REMARKS: One transferred in 1976, four in 1977, one in 1978, three in 1979, one in 4-80, one in 5-80, and the twelfth in 7-80. Reportedly, the original order was reduced from twenty-four to twelve.

♦ 3 Sölöven class Bldr: Vosper, Ltd, Portsmouth

L In serv. In serv. P 512 Susa 31-8-67 8-68 P 514 Sebha (ex-Sokna) 29-2-68 1-69 P 513 SIRTE 10-1-68 4-68



Susa (P 512) — firing a wire-guided missile

Vosper, 1968

D: 95 tons (115 lf) **S:** 50 kts **Dim:** 30.38 (27.44 pp) \times 7.3 \times 2.15

A: 8/SS 12 SSM (II \times 4) - 2/40-mm AA (I \times 2)

M: CODOG: 3 Bristol-Siddeley Proteus gas turbines; 3 props; 12,750 hp; 2 G.M. 6-71 cruising diesels; 190 hp

Man: 20 tot.

Remarks: Modeled on the Danish Sölöven class. All-wood construction, nylonsheathed hull. Missiles are wire-guided and are not very accurate, particularly at high speeds. Cruise diesels are on outboard propeller shafts. Refitted in Italy 1984-85, with new engines and new electronics.

PATROL BOATS AND CRAFT

• 6 Yugoslav PB 90 class Bldr: Tito Brodotekhnika SY, Belgrade (In serv.

D: 90 tons (fl) S: 27 kts Dim: 30.3 × 5.9 × . . . A: 1/40-mm Bofors AA — 4/20-mm AA (IV × 1) Electron Equipt: Radar: 1/Decca 1226

M: 3 MTU diesels; 3 props; 4,350 hp Man: 17 tot.

REMARKS: Ordered 1984. May have a small, high-frequency sonar.

♦ 14 SAR 33-class patrol boats Bldr: Taskizak SY, Turkey (In serv. 1982-84)

D: 150 tons (170 fl) S: 40 kts Dim: 34.5 × 8.60 × 1.85

A: 1/40-mm AA - 2/12.7-mm mg (I $\times 2$)

M: 3 SACM AGO V16CSHR; 3 CP props; 12,000 hp Electric: 300 kw

Fuel: 18 tons Range: 400/35; 1,000/. . . Man: 23 tot.

Remarks: Ordered early 1980 to replace the earlier customs units in service. Wedgeshaped hull of remarkable steadiness at high speeds in heavy seas. Aluminum alloy construction. May be of a lengthened variant, 37.5 m overall. Designed by Abeking & Rasmussen, West Germany. Half reportedly delivered by end of 1983.

Bldr: Müller, Hameln, West Germany (In serv. 1-78) * 2 patrol boats

JIHAD SALAM

D: 120 tons (fl) S: 27 kts Dim: 37.0 × 6.2 × . . .

A: 4/30-mm Hispano-Suiza GCM AO2 AA

M: MTU diesels; . . . props; . . . hp

Range: 1,100/27 Man: 21

REMARKS: Ordered for Lebanon, but when that country could not pay, sold to Libya 1-78. Transferred to Palestine Liberation Organization control in 8-81 and kept in Syria.

• 4 Brooke type Bldr: Brooke Marine, Lowestoft, U.K. (In serv. 1968-70)

PC 1 ZLEITAN (ex-Garian) PC 3 MERAWA PC 2 KHAWLAN PC 4 SABRATHA

D: 100 tons (125 fl) S: 23.5 kts Dim: 36.58 × 7.16 × 1.75

A: 1/40-mm-1/20-mm AA

M: 2 Paxman Ventura 10 YJCM diesels; 2 props; 3,600 hp

Range: 1,800/13 Man: 22 tot.

REMARKS: Have the same engines as the Tobruk and the Zeltin. At least one has a Soviet BM-21 multiple 122-mm rocket launcher (XX \times 1) in place of the 20-mm AA gun. PC 1 renamed to commemorate former repair craft, 1982. Refitted at Taskizak Naval SY, Turkey, in 1983-84.

• 3 security craft Bldr: Vosper Thornycroft, Portsmouth (In serv. 1967-69)

BENINA Homs MISURATA

> **D**: 100 tons **S**: 18-20 kts **Dim**: $30.5 \times 6.4 \times 1.7$ A: 1/20-mm AA M: 3 Rolls-Royce diesels; 1,740 hp

Range: 1,800/14 Man: 15 tot.

Remarks: Used for customs and fishery protection. Sisters Ar Rakib, Farwa, and Akrama ceded to Malta, 1978.

Note: Upwards of 50 radio-controlled suicide boats of Swedish and Cyprian construction are said to be in service for coast defense. No details available, except that speeds of 30 knots are attainable.

MINE WARFARE SHIPS

Note: Libya has laid several minefields, apparently employing the naval roll-on/rolloff cargo ship El Timsah and her merchant sister Ghat, with mine rails on the vehicle deck for the purpose.

♦ 7 (+1) Soviet Natya-class fleet minesweepers

111 AL I'SAR (ex-Ras el Gelais) 119 AL. . . (ex-Ras al Oula) 113 AL TAYYAR (ex-Ras Hadad) 121 AL. . . (ex-Ras al Dawar) 115 At. . . (ex-Ras al Hamman) 123 N. . . (ex-Ras Massad) 117 AL. . . (ex-Ras al Falluga) 125 AL. . . (ex- . . .)

D: 650 tons (750 fl) S: 18 kts Dim: 61.0 × 9.8 × 3.0

A: 4/30-mm AA (II × 2) - 4/25-mm AA (II × 2) - 2/RBU 1200 ASW RL $(V \times 2)$ - mines

Electron Equipt: Radar: 1/Don-2, 1/Drum Tilt

Sonar: . .

IFF: 2/Square Head, 1/High Pole B

M: 2 diesels; 2 props; 5,000 hp Range: 1,600/16; 5,200/10 Man: 50 tot.

REMARKS: First pair delivered 3-81; second pair in 2-83; fifth on 3-9-83, the sixth during 2-84, and the seventh on 20-1-85; one more expected. Like the six built for India, they lack the ramp at the stern found on Soviet units.

MINE WARFARE SHIPS (continued)



ex-Ras Al Oula (119)

P. Voss, 8-83



Libyan Natya No. 115 (as Ras Al Hamman)

L. & L. Van Ginderen, 1-83

AMPHIBIOUS WARFARE SHIPS

112 IBN AL HADRAMI

· 3 Soviet Polnocny-C-class landing ships Bldr: Poland 116 IBN OMAYAR



Libyan Polnocny-C class

D: 1,150 tons (fl) S: 18 kts Dim: 81.3 × 10.1 × 2.1 A: 4/30-mm AA (II \times 2) -2/122-mm artillery RL (XV \times 2) Electron Equipt: Radar: 1/Spin Trough, 1/Drum Tilt M: 2 diesels; 2 props; 5,000 hp

Remarks: One transferred in 12-77 and two in 6-79. Like the Iraqi examples of this Polish-built class of medium landing ships, these export versions have a raised helicopter deck forward of the superstructure. A fourth Libyan unit, the Ibn Al Qyis (113), was lost on 14 or 15 September 1978 through fire at sea.

• 2 Ibn Ouf-class landing ships

Bldr: C.N.I.M., La Seyne

Laid down L In serv. 132 IBN OUF 22-10-76 1-4-76 11-3-77 134 IBN HARISSA 18-4-77 18-10-77 10-3-78



Ibn Harissa (134)

C. Martinelli, 1981

D: 2,800 tons (fl) S: 15 kts Dim: $100.0\times15.65\times2.6$ A: 6/40-mm Breda AA (II \times 3) — 1/81-mm mortar

M: 2 SEMT-Pielstick diesels; 2 CP props; 5,340 hp

Range: 4,000/14 Man: 35 crew + 240 troops

REMARKS: Cargo: 570 tons, including up to eleven tanks. Helicopter platform aft.

♦ 25 (+25) Turkish C 107-class large landing craft Bldr: Taskizak SY. Istanbul, and Gölçük Naval SY

RAS EL HILEL (ex-Turk Ç 132) IBN AL IDRISSI (ex-Turk C 130)

EL KOBAYAT (ex-Turk C 133)

IBN MARWAN (ex-Turk Ç 131)

and 21 others

D: 280 tons (600 fl) S: 10 kts (8.5 loaded) Dim: 56.56 × 11.58 × 1.25 A: 2/20-mm AA (I × 2) M: 3 G.M. 6-71 TI diesels; 3 props; 900 hp Range: 600/10; 1,100/8 Man: 15 tot.

Remarks: Cargo: Five heavy tanks, up to 100 troops; up to 350 tons. Design follows World War II-era British LCT(4). Cargo deck 28.5 × 7.9 m. Ordered 7-12-79, with first two taken from among ships built for Turkish Navy and delivered 7-12-79. As many as 50 may be acquired, with each Turkish yard building 25. Presumably M. Khadafi has designs on a near-neighbor's territory, as these ships are unsuitable for extended voyages. Sixteen were delivered by 4-81.

AUXILIARY SHIPS

711 ZELTIN

1 support ship for small combatants

Bldr Laid down L In serv. Vosper Thornycroft, Woolston 29-2-68 1967 23-1-69



Zeltin (711)

1968

D: 2,200 tons (2,470 fl) S: 15 kts Dim: 98.72 (91.44 wl) × 14.64 × 3.05

A: 2/40-mm AA (I × 2)

M; 2 Paxman Ventura 16 YSCM diesels; 2 props; 3,500 hp

Electric: 800 kw Range: 3,000/14 Man: 15 officers, 86 men

Remarks: The well deck, 41 × 12, can receive small craft that draw up to 2.3 m. Hydraulically controlled stern gate. A movable crane (3-ton loading capacity) is available for the well deck, and a 9-ton crane on the port side supports the workshops.

• 1 ex-Italian Espresso-class roll-on/roll-off transport Bldr: CN Luigi Orlando, Livorno (In serv. 9-71)

El Timsah (ex-Espresso Veneto)

D: 5,000 tons (fl) S: 19 kts Dim: 105.3 (96.5 pp) × 17.5 × 5.1 M: 2 Fiat V18 diesels; 2 CP props; 9,000 hp

Remarks: Has fin stabilizers. Used as military transport and as a minelayer. Purchased 1972; delivered 30-12-72 after refit. Berths for 100 troops. Merchant sister Ghat believed to have laid the 1983 Red Sea minefield.

Bldr: Tito Sy, Belgrade 1 Yugoslav Spasilac-class submarine rescue ship 722 ZLATICA

D: 1,590 tons (fl) S: 13 kts Dim: 55.50 × 12.00 × 3.84 (4.34 props)

A: 4/14.5-mm mg (II × 2) Electric: 540 kVA

M: 2 diesels; 2 CP props; 4,340 hp Man: 53 tot.

Remarks: Delivered to Tripoli late in 1982. Intended to support the six Foxtrot-class submarines. Has decompression chamber, extensive diving equipment, can lay a 4-point moor, and can tow. Carries 490 tons cargo fuel.

• 1 small transport

El Fateh (ex-Panamanian Mebo II)

D: 640 grt S: 10.5 kts Dim: 44.00 × 8.90 × 3.20 M: 2 Sulzer diesels

Remarks: Acquired 1977.

• 3 harbor tugs Bldr: Jonker & Stans SY, The Netherlands (In serv. 1980)

A 33 A 34 A 35

D: 150 grt S: . . . Dim: 26.60 × 7.90 × 2.48

M: 2 diesels; 2 Voith-Schneider vertical-cycloidal props; . . . hp

Remarks: Two 17.00 × 6.25 × 2.75 harbor tugs were delivered at the same time.

LIBYA (continued)

AUXILIARY SHIPS (continued)

• 4 Ras El Helal-class tugs

Bldr: Mondego, Foz, Portugal

In serv.

In serv. AL KERIAT 17-2-78

RAS EL HELAL 22-10-77

17-2-78

AL SHWEIREF

AL TABKAH 29-7-78

D: 200 grt S: 14 kts Dim: 34.8 × 9.0 × 4.0 (moulded depth)

M: 2 diesels; 2 props; 2,300 hp

1 Soviet Yelva-class diving tender

AL MANJAD (ex-VM 917)

D: 295 tons (fl) S: 12.4 kts Dim: 40.9 × 8.0 × 2.1

Electron Equipt: Radar: 1/Spin Trough M: 2 Type 3D12 A diesels; 2 props; 600 hp

REMARKS: Transferred 19-12-77. Can support seven hard-hat divers working at 60 m and has a submersible decompression chamber.

• 1 floating dry dock

Bldr: Blohm & Voss, Hamburg (In serv. 1984)

Capacity: 3,200 tons Dim: 105.20 × 26.00 × 6.40

REMARKS: Ordered 20-2-84, laid down 17-4-84.

1 Soviet Poluchat-I-class torpedo retriever

D: 90 tons (fl) S: 18 kts Dim: 29.6 × 6.1 × 1.9 A: . . . Electron Equipt: 2 props; 2,400 hp

Range: 450/17; 900/10 Man: 20 tot.

Remarks: Delivered 20-5-85 under tow by Bulgarian tug Neptun.

MADAGASCAR

Democratic Republic of Madagascar

Personnel: Approximately 600 men, including a 120-marine infantry company Merchant Marine (1984): 60 ships - 77,886 grt (tankers: 6 ships - 11,412 grt)

PATROL BOAT AND CRAFT

• 1 French PR 48-type coastal patrol boat renne

Bldr: SFCN, Villeneuve-la-Ga-

Laid down MALAIKA

In serv. 12-67

22-3-67 11-66

D: 235 tons (250 fl) S: 18.5 kts Dim: 47.5 (45.5 pp) × 7.1 × 2.25

A: 2/40-mm AA M: 2 MGO diesels; 2 props; 2,400 hp

Range: 2,000/15 Man: 3 officers, 22 men

REMARKS: Sisters with more powerful propulsion plants in the Senegalese and Tunisian navies.

1 North Korean Nampo class (In serv. 1979-80)

D: 70 tons (fl) S: 40 kts Dim: 27.7 × 6.1 × 1.8

A: 4/14.5-mm mg (II $\times 2$) -1/75-mm recoilless rifle

M: 4 M50-series diesels; 4 props, 4,800 hp

Range: 375/40 Man: 19 tot.

REMARKS: Unlike North Korean Navy version, has no bow ramp or troop accommodations, being intended for use strictly as patrol craft. Metal construction. Three sisters destroyed by typhoon during 4-84.

AMPHIBIOUS WARFARE SHIPS

• 1 medium landing ship

Bldr Laid down Току 1972

Diego Suarez SY

In serv. 1973 10-74

D: 810 tons (avg) S: 13 kts Dim: 66.37 (56.0 pp) × 12.5 × 1.9 A: 1/76-mm - 2/20-mm AA - 1/81-mm mortar Man: 27 tot.

M: 2 MGO diesels; 2 props; 2,400 hp Electric: 240 kw Range: 3,000/12

Remarks: Similar to a French EDIC. Used as a transport and support ship. Forward ramp can be folded upon itself. Transport capacity: 250 tons. Quarters for 30 passengers; 120 soldiers can be carried for short distances. Financed by the French government under the Military Cooperation Pact.

TRADING SHIP

* 1 former trawler

Bldr

FANANTENANA (ex-Richelieu) A.G. Weser, Bremen

D: 1,040 tons (1,200 fl) S: 12 kts Dim: 62.9 (56 pp) × 9.15 × 4.52

A: 2/40-mm AA M: 2 Deutz diesels ("father-mother" system); 1 prop; 1,060 + 500 hp Man: . .

Remarks: 691 grt. Bought and modified, 1966-67. Can carry 300 tons of freight and up to 120 military passengers.

MARITIME POLICE

 5 coast surveillance craft serv. 1962)

Bldr: Bayerische Schiffbau, West Germany (In

GC 1 PHILIBERI ISIRANANA GC 4 FANROSOANA

GC 2 FAHELEOVATENA

GC 5 FAHAFAHANA

GC 3 N.

D: 46 tons S: 22 kts Dim: 24.0 × . . . × . . .

A: 1/40-mm AA M: 2 diesels; 2 props; . . . hp

MALAWI

Republic of Malawi

MERCHANT MARINE (1984): 2 ships - 1,348 grt

POLICE

PATROL CRAFT

 1 for Lake Nyasa service serv. 17-12-84)

Bldr: SFCN, Villeneuve-la-Garenne, France (In

703 CHIKALA



Chikala (703)

L. & L. Van Ginderen, 1984

D: 33 tons (36 fl) S: 22 kts Dim: 21.0 (18.5 wl) × 4.8 × 1.5

A: 1/20-mm GIAT F-2 AA Electron Equipt: Radar: 1/Orcca . . . nav.

M: 2 Poyaud 520-V12-M2 diesels; 2 props; 1,400 hp

Range: 650/15 Man: 10 tot.

Remarks: Ordered 8-11-83. Delivered in sections 10-84 and assembled in Malawi.

• 1 Spear class

Bldr: Fairey Marine, Hamble, U.K. (In serv. 1976)

D: 4 tons (fl) S: 25 kts Dim: 9.1 × 2.8 × 0.8

A: 2/7.62-mm mg (I × 2)

M: 2 Perkins diesels; 2 props; 290 hp Man: 3 tot.

REMARKS: There are also as many as three additional small patrol craft on Lake Nyassa.

MALAYSIA

Note: Forces specifically assigned to the Malaysian state of Sabah are listed separately.

Personnel: Approximately 6,000 total, plus 800 reserves

Merchant Marine (1984): 429 ships - 1,664,312 grt (tankers: 67 ships - 355,153 grt)

NAVAL AVIATION: A Naval Air Wing is to be established with 12 pilots in 5-86, to man helicopters yet to be acquired.

Note: In 1985 it was announced that submarines may be acquired.

FRIGATES

Bldr: Howaldtswerke, Kiel ♦ 2 new construction Type 1500

In serv. Laid down 14-5-83 15-8-84 F 25 KASTURI 31-1-83 F 26 LEKIR 31-1-83 14-5-83 15-8-84



Kasturi (F 25)

Howaldtswerke, 1984



Kasturi (F 25)

L. & L. Van Ginderen, 8-84

D: 1,690 tons (1,900 fl) **S:** 28 kts **Dim:** 97.3 (91.8 pp) \times 11.3 \times 3.5 (hull) **A:** 4/MM 38 Exocet—1/100-mm Compact DP—1/57-mm Bofors DP—4/30-mm Emerlec AA (II \times 2)—1/375-mm Bofors ASW RL (II \times 1)—1/light helicopter.

Electron Equipt: Radar: 1/Decca 1226 nav., 1/H.S.A. DA .08, 1/H.S.A. WM 22

Sonar: Atlas ASO 84/5

EW: "Rapids" intercept, "Scimitar" jammer; 2 Dagaie RL

M: 4 MTU 20V 1163 TB92 diesels; 2 CP props; 21,460 hp

Fuel: 200 tons Electric: 1,392 kVA Range: 3,600/18; 7,000/14 Man: 128 tot.

Remarks: Ordered 10-6-81. Acquisition of two more deferred. There is no hangar, only a deck for an as-yet-to-be-determined light helicopter. The 100-mm gun is of the new Creusot-Loire "Compact" model. Two H.S.A. LIOD optronic backup GFCS for the 100-mm and 57-mm guns. Both arrived in Malaysia 23-11-84. Can make 23 kts on 2 diesels. There are flare rocket launchers on the sides of the 57-mm mount. Four similar, but shorter and differently equipped sisters built for Colombia.

• 1 "Yarrow frigate" class

Bldr Laid down In serv. Yarrow, Scotstoun 18-12-67 F 24 RAHMAT 2-66 3-71



Rahmat (F 24)

J. Jedrlinic, 6-83

D: 1,290 tons (1,600 fl) S: 27 kts (16.5 on diesels alone)

Dim: 93.97 (pl. 44 pp) \times $10.36 <math>\times$ 3.05

A: 1/114-mm Mk 6-mm DP — 3/40-mm Bofors AA (I × 3) — 1/Mk 10 Limbo ASW mortar (III × 1)

Electron Equipt: Radar: 1/Decca 626, 1/H.S.A. LW 02, 1/H.S.A. M 22 Sonar: 1/170B, 1/174

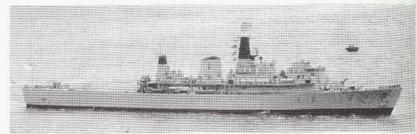
M: CODOG: 1 Rolls-Royce Olympus TM-1B gas turbine, 19,500 hp; 1 Crossley-Pielstick SPC2V diesel, 3,850 hp; 2 CP Props; 22,000 hp

Electric: 2,000 kw Range: 1,000/27; 5,200/16.5 Man: 120 tot.

Remarks: Ordered 11-2-66. M 22 fire-control radar atop the mast for the 114-mm gun. The ASW mortar is covered by a hatch that serves as a platform for a light helicopter. Sea Cat SAM system and radar director replaced by a 40-mm AA gun during 1981-82 refit. Plans to replace the 114-mm mount with a French 100-mm Compact were deferred.

• 1 British built Bldr: Yarrow, Scotstoun

Laid down L In serv. F 76 HANG TUAH (ex-Mermaid) 29-12-66 16-5-73 1965



Hang Tuah (F 76)

G. Arra, 1980

D: 2,300 tons (2,520 fl) **S:** 24/23 kts **Dim:** $103.4 \times 12.2 \times 4.8$

A: 2/102-mm Mk 19 DP-4/30-mm Emerlec AA (II × 2)-2/40-mm AA $(I \times 2) - 1/Mk$ 10 Limbo ASW mortar (III × 1)

Electron Equipt: Radar: 1/Plessey AWS-1, 1/978 Sonar: 1/174, 1/170B

M: 8 16-cyl. Admiralty Standard Range-I diesels; 2 props; 14,400 hp

Fuel: 230 tons Range: 4,800/15 Man: 200-210 tot.

REMARKS: Ordered for Ghana in 1964. Because of the political situation, the ship was not delivered and at the end of 1971 was purchased by the British government. Transferred to Malaysia in 5-77. Has lead-computing STD Mk 1 sight for the Mk 19 twin 102-mm mount, and no fire-control radar. Helicopter pad.

CORVETTES

◆ 2 (+1) offshore patrol vessels

| | Bldr | L | In serv. |
|--------------|-----------------------------|---------|----------|
| 160 Mashturi | Korea SB & Eng., Pusan | 20-7-84 | 1-4-85 |
| N | Malaysian SY & Eng., Johore | 21-1-85 | 9-85 |
| N | Malaysian SY & Eng., Johore | | |



Mashturi (160) at launch

Korea SB & Eng., 7-84

D: 1,000 tons (1,300 fl) S: 20 kts Dim: 75.0 × 10.0 × . . .

A: 1/40-mm AA -2/30-mm Emerlec AA (II \times 1)

Electron Equipt: Radar: . .

M: 2 diesels; 2 props; 6,360 hp Range: 5,000/20 Man: 76 tot.

REMARKS: First two ordered 6-83. Intended to patrol the 200-n.m. economic zone. Third unit ordered 5-84.

GUIDED-MISSILE PATROL BOATS

| ♦ 4 Spica-M class | Bldr: Ka | Varvet, Swee | | |
|-------------------|-----------|--------------|----------|--|
| | Laid down | L | In serv. | |
| P 3511 HANDALAN | 24-5-77 | | 26-10-79 | |
| P 3512 Perkasa | 27-6-77 | | 26-10-79 | |
| P 3513 PENDIKAR | 15-7-77 | | 26-10-79 | |
| Р 3514 СЕМРІТА | 21-10-77 | * * * | 26-10-79 | |
| | | | | |



den

Handalan (P 3511)

RAN, 1982

D: 240 tons (268 fl) S: 37.5 kts (34.5 sust.) Dim: 43.62 (41.00 pp) × 7.0 × 2.4

A: 4/MM 38 Exocet SSM (II × 2) - 1/57-mm Bofors DP - 1/40-mm Bofors AA Electron Equipt: Radar: 1/Decca 1226, 1/Phillips 9LV200 Mk 2 system (1 tracker, 1/9GR600 search radar)

Sonar: Simrad SU-EW: MEL SUSIE-1 M: 3 MTU 16V538 TB91 diesels; 3 props; 10,800 hp Fuel: 80 tons Electric: 400 kVA Range: 1,850/14 Man: 5 officers, 34 men

Remarks: Ordered 13-8-76. Given the names of the four Perkasa-class torpedo/patrol boats that were stricken in 1977. Have 103-mm rocket flare launchers on the 57-mm mount and 57-mm RFL on the 40-mm mount. Can be equipped with ASW TT if required. Do not carry the Blowpipe SAM system offered with the original design. A planned second group of four may be ordered during 1986.

♦ 4 French Combattante-II 4AL class Bldr: CMN, Cherbourg

| | L | In serv | | L | In serv. |
|----------------|----------|----------|----------------|----------|----------|
| P 3501 PERDANA | 31-5-72 | 31-12-72 | P 3503 GANAS | 26-10-72 | 28-2-73 |
| P 3502 Serang | 22-12-71 | 31-2-73 | P 3504 Ganyang | 16-3-72 | 20-3-73 |



Ganyang (P 3504) - without missiles, 40-mm gun

J. Jedrlinic, 1982

D: 234 tons (265 fl) S: 36.5 kts Dim: 47.0 × 7.1 × 2.5 (fl) A: 2/MM 38 Exocet SSM (I × 2) - 1/57-mm Bofors AA - 1/40-mm Bofors AA Electron Equipt: Radar: 1 Decca 1226, 1/Triton, 1/Pollux M: 4 MTU MB 870 diesels; 4 props; 14,000 hp Fuel: 39 tons Range: 800/25 Man: 5 officers, 30 men

Remarks: Steel hulls. Superstructure in alloyed metal. Six 103-mm rocket flare launchers on the 57-mm mount, four 57-mm on the 40-mm mount. Thomson-CSF Vega fire-control system with Triton search radar. Pollux f.c. radar.

PATROL BOATS

• 6 Jerong class Bldr: Hong Leong-Lürssen, Butterworth, Malaysia

| | L | In serv. | | L | In serv. |
|---------------|---------|----------|--------------|---------|----------|
| P 3505 Jerong | 28-7-75 | 23-3-76 | P 3508 Yu | 17-7-76 | 15-11-76 |
| P 3506 TUDAK | 16-3-76 | 16-6-76 | P 3509 Baung | 5-10-76 | 11-7-77 |
| P 3507 Paus | 2-6-76 | 18-8-76 | P 3510 Pari | 1-77 | 23-3-77 |

D: 210 tons (255 fl) S: 34 kts Dim: 44.90 × 7.00 × 2.48 (props)

A: 1/57-mm Bofors AA — 1/40-mm Bofors AA

Electron Equipt: Radar: 1/Decca 1226

M: 3 MTU MB 870 diesels; 3 props; 10,800 hp Electric: 384 kVA Range: 700/31.5; 2,000/15 Man: 5 officers, 31 men

Remarks: Lürrsen FPB 45 design. Rocket flare launchers are fitted on both gun mounts. C.S.E.E. Naja electro-optical GFCS. Fin stabilizers fitted.



Baung (P 3509)

J. Jedrlinic, 1981

| ♦ 20 103-foot Vosper type | Bldr: Vo | sper Ltd., Portsmouth | |
|---------------------------|----------|-----------------------|----------|
| Ordered in 1965: | | | |
| | L | | L |
| P 34 Kris | 11-3-66 | P 36 SUNDANG | 22-5-66 |
| P 37 Badek | 8-5-66 | P 38 RENCHONG | 22-6-66 |
| Р 39 Томвак | 20-6-66 | P 40 Lembing | 22-8-66 |
| P 41 SERAMPANG | 15-9-66 | P 42 PANAH | 10-10-66 |
| P 43 Kerambit | 20-11-66 | P 44 BALADAU | 11-1-67 |
| P 45 Kelewang | 31-1-67 | P 46 RENTAKA | 15-3-67 |
| P 47 Sri Perlis | 26-5-67 | P 48 Sri Johore | 21-8-67 |



Kerambit (P 43) -with 2/40-mm AA

RAN, 1982

Ordered in March 1963:

| P 3144 Sri Sabah P 3146 Sri Negri Sembilan | 30-12-63 17-9-64 | P 3145 Sri Sarawak | 20-1-64 |
|---|---------------------|---------------------|-------------|
| Ordered in September 1961: | | | |
| P 3139 Sri Selangor | L 17-7-62 | P 3142 Sri Kelantan | L 8-1-63 |
| P 3143 SRI TRENGGANU | 12-12-62 | | |



Sri Kelantan (P 3142)

J. Jedrlinic, 1983

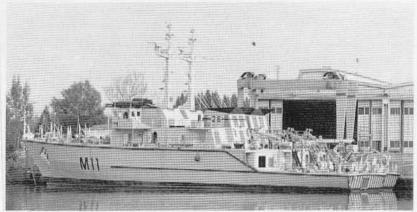
D: 96 tons (109 fl) S: 27/23 kts Dim: 31.39 (28.95 pp) × 5.95 × 1.65 A: 1 or 2/40-mm AA (I × . . .)—2 mg Electron Equipt: Radar: 1/Decca 616 M: 2 Bristol-Siddeley or Maybach MD 655/18 diesels; 2 props; 3,550 hp Range: 1,400/14 Man: 3 officers, 19-20 men

Remarks: Welded hulls. Vosper anti-roll stab lizers. The Malaysian prototype was delivered in February 1963 and was soon followed by many others. The middle group have greater range: 1,660/14. The class prototype, the Sri Kegah (P 3138), and the Sri Pahang (P 3141) were stricken 1976; Sri Perek (P 3140) foundered 1-84. Bulwark configurations vary, while early units had hull portholes. Aft 40-mm gun removed in at least three. Seventeen of the survivors had been modernized by end-1984. Sister Sri Melaka (P 3147, 2nd group) is detached to Sabah (see later page).

MINE WARFARE SHIPS

| / LO Ttolion | Taulal alasa minahu | mtone Dida | Intomonino | T. | Connin |
|---------------|---------------------|-------------|--------------|----|--------|
| z (+z) Itanan | Lerici-class minehu | nters Blar: | Intermarine, | La | Spezia |

| | Laid down | L | In serv |
|---------------|-----------|--------|---------|
| M 11 MAHAMIRU | | 4-83 | 25-5-84 |
| M 12 Jerai | | 9-7-83 | 25-5-84 |
| M 13 LEDANG | 101 1 | | -86 |
| M 14 Kinabulu | | | -86 |



Mahamiru (M 11) and Jerai (M 12)

C. Martinelli, 10-84

D: 470 tons (502 fl) S: 15 kts Dim: 49.98 (45.50 pp) \times 9.56 \times 2.63 A: 1/40-mm Bofors AA

Electron Equipt: Radar: 1/Decca . . . nav.—Sonar: SQQ-14

M: 2 MTU 8V396 TC82 diesels; 2 props; 1,740 hp Electric: 887 kVA

Fuel: 46 tons Range: 1,400/14; 2,500/12 Man: 39 tot.

Remarks: Ordered 2-81. Intended for patrol duties also. May be 1-2 meters longer than listed. Glass-reinforced plastic construction. Have different main engine, armament, and sonar than Italian Navy sisters. Two retractable auxiliary props (470 hp) used when minehunting at speeds up to 7 kts. Range at 12 kts can be extended to 4,000 n.m. by using the passive anti-rolling tanks to carry fuel. Will have two PAP-104 remote-controlled minehunting devices, good in depths up to 300 m. A chaff RL will be fitted.

AMPHIBIOUS WARFARE CRAFT

Note: In addition to these small craft, the multi-purpose ships of the *Sri Indera Sakti* class, the former U.S. Navy LSTs, and the miscellaneous utility landing craft listed under auxiliaries can be used for amphibious warfare purposes.

• 5 U.S. LCM(6)-class vehicle landing craft Bldr: De Havilland Marine, Australia

LCM 1-5

D: 24 tons (56 fl) S: 10 kts Dim: 17.07 × 4.37 × 1.17

M: 2 diesels; 2 props; 330 hp Range: 130/10

Remarks: Transferred around 1970 from Australia. Cargo: 30 tons.

• 9 RCP-class personnel/vehicle landing craft
SY, Butterworth, Malaysia (All in serv. 1974)

Bldr: Hong Leong-Lürssen



RCP 2

1974

D: 15 tons (30 fl) S: 17 kts Dim: 15.0 × 4.4 × . . . A: 1/20-mm AA M: 2 diesels; 2 waterjets: . . . hp

REMARKS: Cargo: 35 troops or one small vehicle

• 15 LCP-class personnel landing craft lia Bldr: De Havilland Marine, Austra-

LCP 1-15

D: 19 tons (fl) S: 16 kts Dim: 14.6 × 4.3 × 1.0

M: 2 Cummins diesels; 2 props; 400 hp

Remarks: Transferred 1965-66. Essentially personnel launches, with pointed bows; have light armor over pilothouse amidships. There are also several De Havilland "Titan" Mk 3 12-meter landing craft in service.

HYDROGRAPHIC SHIP

1 seagoing oceanographic research and hydrographic survey ship

Bldr In serv.
A 152 MUTIARA Hong Leong-Lürssen, Butterworth, Malaysia 18-11-77



Mutiara (A 152)

G. Arra, 1980

D: 1,905 tons (fl) S: 16 kts Dim: 70.0 (64.0 pp) × 13.0 × 4.0 A: 2/20-mm AA (I × 2) M: 1 Deutz SBA-12M-528 diesel; 1 CP prop; 2,000 hp Range: 4,500/16 Man: 13 officers, 143 men

Remarks: Ordered 1975. Carries six small survey launches and has a helicopter deck. White hull, buff stack.

AUXILIARIES

• 3 multi-purpose support ships

| | Laid down | L | In serv. | Bldr: |
|-------------------------|-----------|--------|----------|---------------------|
| A 1503 SRI INDERA SAKTI | 15-2-80 | 1-7-80 | 24-10-80 | Bremer Vulcan |
| A 1504 Mahawangsa | | | 16-5-83 | Korea-Tacoma, Masan |
| A 1505 N | * * * | | -85 | Korea-Tacoma, Masan |



Sri Indera Sakti (A 1503)

LSPH E. Pitman, R.A.N., 11-84

D: 2,000 tons light (4,300 fl)
 S: 16.8 kts
 Dim: 100.00 (91.20 pp) × 15.00 × 4.75
 A: 1/57-mm Bofors DP - 2/20-mm (I × 2)
 M: 2 Deutz-KHD SBV 6M540 diesels; 2 CP props; 5,986 hp

Electric: 1,200 kw Endurance: 60 days Fuel: 1,350 tons (max.) Range: 14,000/15 Man: 14 officers, 126 men, 75 passengers

Remarks: 1,800 dwt. A 1503 ordered 10-79, two more in 2-81. Intended to perform a variety of tasks, such as: provide support (including up to 1,300 tons of fuel and 200 tons water) to deployed small combatants or mine-countermeasures ships; act as a flagship; perform as a vehicle and troop transport in amphibious operations; and act as a cadet training ship. There are 1,000 m³ of cargo space for spare parts, and ten 20-ft standard cargo containers can be carried on deck amidships. Vehicle holds aft are reached by ramps on either side of the stern, which supports a helicopter deck; can carry 600 troops on the 680-m² vehicle deck. Extensive repair facilities and divers' support equipment are provided. Provisions spaces total 300 m², including 100 m³ refrigerated stores. Bow-thruster fitted, as is a 16-ton crane amidships. CSEE Naja optical GFCS. A 1504 lacks a funnel, thus effectively doubling the size of the helo deck; the second pair are configured to carry 500 tons of ammunition.

Note: The two surviving ex-U.S. LST 542-class landing ships, Sri Banggi (A 1501, ex-Henry County, LST 824) and Rajah Jerom (A 1502, ex-Sedgewick County, LST 1123) were to strike on delivery of A 1504 and A 1505.

♦ 2 utility landing craft/transports Bldr: Penang SY, Pulau Jerejah

A. . . Lang Siput 1980 1980 A. . . Lang Tiram 25-9-80 21-10-80

D: 630 grt S: 9 kts Dim: 48.4 (45.0 pp) × 10.5 × . . . M: 2 Caterpillar D3408 diesels; 2 props; 700 hp

AUXILIARIES (continued)

♦ 2 Jernih-class utility landing craft/transports Bldr: Brooke DY, Malay-

A. . . Jernih (In serv. 1977) A. . . Terijah (In serv. 1978)

D: 290 (fl) S: 8 kts Dim: 38.0 (35.2 pp) × . . . × 1.4

M: 2 Caterpillar D343T diesels; 2 props; 730 hp

Remarks: Capacity: 170 tons of dry cargo or 240 tons of fresh water. Intended as supply craft for Sarawak.

 1 Meleban-class utility landing craft Bldr: Brooke DY, Malaysia

A. . . MELEBAN (L: 15-10-77)

D: . . . S: 8 kts Dim: 50.0 (43.5 pp) × . M: 2 Caterpillar D343T diesels; 2 props; 730 hp

• 1 small cargo ship (In serv. 1977)

A 301 ENTERPRISE

1 small tanker (In serv. 1973)

A 8 Kepah (ex-Asiatic Supplier) - 432 grt. Purchased 1980.

• 1 diving tender

In serv. 18-8-70 5-1-71 A 1109 Duyong Kall Teck SY, Singapore

D: 140 tons (fl) S: 10 kts Dim: 33.0 × 6.3 × 1.7 A: 1/20-AA M: 2 Cummins diesels; 2 props; 500 hp Man: 23 tot.

Remarks: Used as a support ship for divers. Originally configured as a torpedo retriever.

Bldr: Penang SY, Pulau Jerejah 4 coastal tugs

LANG . . . 5-81 LANG KANGOK 1982 LANG . . . 1981 LANG HINDEK 1982

D: . . . S: 12.5 kts Dim: 29.0 × 7.0 × 2.0 M: 2 Ruston Paxman diesels; 2 props; 1,800 hp

Bldr: Ironwood SY, Malaysia (In serv. 1978-79) 3 Tunda-class harbor tugs

A 1 TUNDA 1 A 2 Tunda 2 A 3 TUNDA 3

D: 150 tons S: . . . Dim: 26.0 × . . . × . . . M: 1 Cummins diesel; 1 prop: . . . hp

1 salvage and fire-fighting tug (In serv. 1976)

A 4 Penyu (ex-Salvigilant) - Purchased 1980; 398 grt.

• 2 salvage and fire-fighting tugs

A 20 BADANG I A 21 BADANG II - 400 grt

9 miscellaneous tugs

A 6 Sotong (ex-Asiatic Charm) — 233 grt, blt. 1976; purchased 1980.

A 9 SIPUT A 10 TERITUP A 11 BELANKAS A. . . SELAR A. . . MANGKASA A. . . TEPURUK A. . . KEMPONG A. . . PATAK

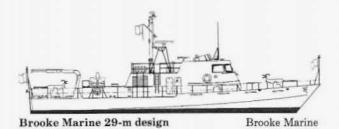
ROYAL MALAYSIAN MARINE POLICE

Note: Planned acquisitions include three 40-m patrol boats equipped with helicopter platforms and four 32-m patrol boats.

PATROL BOATS

Bldr: Penang SY, Pulau Jerejah (In serv. 9 Brooke Marine 29-m design 1982-83)

PX 28 SANGITAN 8 others (PX 29-36)



D: 114 tons S: 36 kts Dim: 29.0 (26.5 pp) × 6.0 × 1.7 A: 2/20-mm AA $(I \times 2) - 2/7.62$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/navigational

M: 2 Paxman Valenta 16 RP 200M diesels; 2 props; 8,000 hp

Range: 1,200/24 Man: 4 officers, 14 men

Remarks: Ordered 1980. Status of program unavailable. Originally reported as haval, but now stated to be Marine Police-subordinated. Design evolved from the FX 26 class. Carry 2,000 rds. 20-mm ammunition.

• 15 PZ class Bldr: Hong Leong-Lürrsen, Butterworth, Malaysia (In serv. 1981-1983)

PZ 10 LANG HITAN 14 others (PZ 2-15)



Lang Hitan (PZ 10)

R.A.N., 1982

D: 188 tons (205 fl) S: 34 kts Dim: 38.50 (36.00 wl) × 7.00 × 2.20

A: 1/40-mm AA - 1/20-mm AA - 2/7.62-mm mg

M: 2 MTU 20V538 TB92 diesels; 2 props; 9,000 hp Electric: 130 kVA

Range: 550/31.5; 1,100/16 Man: 3 officers, 24 men

Remarks: Lürssen FPB 38 design. Have 2 rocket flare launchers, carry 1,000 rounds 40-mm, 2,000 rounds 20-mm.

♦ 6 PX 26 class Bldr: Hong Leong-Lürssen, Butterworth, Malaysia (In serv. 1973-74)

PX 25 N. PX 29 N. PX 27 SRI TAWAU PX 26 SRI KUDAT PX 28 N. PX 30 N.



PX 28

Brooke Marine

D: 62.5 tons S: 25 kts Dim: 28.0 × 5.4 × 1.6 A: 2/20-mm AA (I × 2) M: 2 MTU MB820Db diesels; 2 props; 2,460 hp Range: 1,050/15 Man: 19 tot.

 6 improved PX class Bldr: Vosper Thornycroft Pty, Singapore (In serv. 1973-74)

PX 19 ALOR STAR PX 21 KUALA TRENGGANU PX 20 KOTA BAHRU PX 22 JOHORE BAHRU

PX 23 SRI MENANTI PX 24 KUCHING



Sri Menanti (PX 23)

Vosper, 1974

D: 92 tons (fl) S: 25 kts Dim: 27.3 × 5.8 × 1.5 A: 2/20-mm AA (I × 2) M: 2 MTU MB820Db diesels; 2 props; 2,460 hp Range: 750/15 Man: 18 tot.

MALAYSIA (continued) PATROL BOATS (continued)

• 16 PX class

Bldr: Vosper Thornycroft Pty, Singapore, 1963-69

РХ 1 Манкота

PX 7 BENTARA

PX 13 PEKAN PX 14 KELANG

PX 2 TEMENGGONG PX 3 HULUBALANG

PX 8 PERWIRA PX 9 PERTANDA PX 10 SHAHBANDAR

PX 15 KUALA KANGSAR PX 16 ARAU

PX 4 Maharajesetia PX 5 MAHARAJELELA PX 6 PAHLAWAN

PX 11 SANGSETIA PX 12 LAKSAMANA



Shahbandar and Sangsetia (PX 10, PX 11)

1975

D: 85 tons (fl) S: 25 kts Dim: 26.29 × 5.7 × 1.45

A: 2/20-mm AA (I × 2)

M: 2 Mercedes-Benz MB820Db diesels; 2 props; 2,460 hp Range: 700/15

Man: 15 tot.

REMARKS: Sisters Sri Gumantong (PX 17) and Sri Labuan (PX 18) are operated by the Sabah government

Note: The Royal Malaysian Marine Police operate a large number of smaller patrol and

MALAYSIAN CUSTOMS AND EXCISE SERVICE

PATROL BOATS

• 6 Vosper 103-ft design Bldr: Malaysian SY & Eng. Co.-Pasir Gudang

K 1 BAHTERA PERAK

K 2 BAHTERA BAYU

K 3 BAHTERA HIJAU

K 4 BAHTERA PULAI

K 5 BAHTERA JERAI

K 6 BAHTERA JUANG

D: 100 tons (143 fl) S: 27 kts Dim: 32.40 (29.50 pp) × 7.20 × 1.80

A: 1/20-mm AA — 2/7.62-mm mg (I × 2)

M: Paxman Valenta 16RP200 diesels; 2 props; 4,000 hp; 1 Cummins KTA-1550M cruise diesel; 1 prop; 575 hp

Range: 1,200/10; 2,000/8 Fuel: 36 tons Man: 26 tot.

Remarks: Ordered built under license from Vosper Pty, Singapore. First two in service 1982; last delivered 30-3-84. Generally resemble Malaysian Navy units of this design. The Customs and Excise Service also operates a number of small craft.

MALDIVE ISLANDS

Republic of the Maldives

Personnel: Approximately 150 total

Merchant Marine (1984): 32 ships - 136,564 grt (tankers: 2 ships - 1,377 grt)

PATROL BOATS AND CRAFT

♦ 1 20-m Tracker

Bldr: Fairey Marine, Cowes, U.K.

REMARKS: Ordered 6-85.

+ 3 9-m Bldr: Fairey Marine, Cowes, U.K. (Ordered 6-85)

♦ 1 ex-British RTTL Mk-2-class target-towing launch

D: 34.6 tons (fl) S: 30 kts Dim: 20.7 × 5.8 × 1.8

A: mg M: 2 Rolls-Royce Sea Griffon gasoline engines; 2 props; 1,100 hp

Remarks: Transferred in 1976 by the departing Royal Air Force.

◆ 1 ex-British 1300-class tender

D: 28.3 tons S: 13 kts Dim: 19.2 × 4.9 × 1.5

M: 2 Rolls-Royce C6 diesels; 2 props; 190 hp Man: 5 tot.

Remarks: Transferred by the departing Royal Air Force. Cargo: 5 tons

3 ex-Taiwanese trawlers

Remarks: Approximately 600 tons (fl). Fitted with 2/25-mm AA guns (II × 1) by the U.S.S.R. after confiscation for poaching in 1976.

♦ 4 ex-British 19.5-meter landing craft

REMARKS: Transferred in 1976

1 customs launch

Bldr: Fairey Marine, U.K. 1975

MALTA

Republic of Malta

Merchant Marine (1982): 93 ships - 425,563 grt (tankers: 3 ships - 6,973 grt)

COAST GUARD

PATROL BOATS AND CRAFT

♦ 2 ex-Yugoslav Type 131 class

Bldr: Trogir SY (In serv. 1965-68)

P 38 President Tito (ex-Durmitor, 138)

P 39 President Mintoff (ex-Cer, 139)



President Mintoff (P 39)

L. & L. Van Ginderen, 7-83

D: 85 tons light (120 fl) S: 22 kts Dim: 32.0 × 5.5 × 2.5

A: 6/20-mm Hispano-Suiza HS831 AA (III × 2)

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 2 MTU 820Db diesels; 2 props; 1,800 hp

Remarks: Transferred 31-3-82

♦ 2 ex-U.S. Swift-class PCF

Bldr: Sewart Seacraft, 1967

C 23 (ex-U.S. C 6823) C 24 (ex-U.S. C 6824)



C 23

P. Voss, 10-82

D: 22.5 tons (fl) **S**: 25 kts **Dim**: $15.6 \times 4.12 \times 1.5$

A: 3/12.7-mm mg (II × 1 and 1 combined with 1/81-mm mortar)

M: 2 G.M. 12V71T diesels; 2 props; 960 hp Endurance: 24-36 hours

Man: 6-8 tot.

REMARKS: Donated 1-71.

MALTA (continued) PATROL BOATS AND CRAFT (continued)

◆ 2 ex-Libyan customs patrol craft ston; C 32: Thornycroft, Woolston Bldr: C 31: Vosper Thornycroft, Wool-

C 28 (ex-Ar Rakib) C 29 (ex-Akrama)



C 28

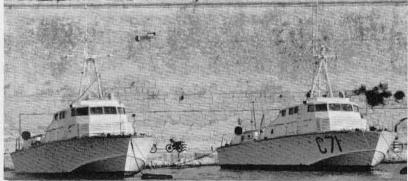
L. & L. Van Ginderen, 7-83

D: 100 tons (fl) S: 18 kts Dim: $30.5 \times 6.4 \times 1.7$ A: 1/20-mm AA M: 3 Rolls-Royce diesels; 3 props; 1,740 hp Range: 1,800/14 Man: 15 tot.

REMARKS: Transferred in 1978. C 30 (ex-Farwa) sank 1981.

• 2 British RAF RTTL Mk 2-class rescue launches

C 68 (ex-2768) C 71 (ex-2771)



C 68 and C 71

P. Voss, 10-82

D: 34.6 tons S: 30 kts Dim: 20.7 × 5.8 × 1.8 M: 2 Rolls-Royce Sea Griffon gasoline engines; 2 props; . . . hp Man: 9 tot. Remarks: Transferred early 1970s; wooden construction.

2 ex-Libyan customs launches

Bldr: Mosir SY, Trogir, Yugoslavia, 1963

C 25 (ex-Arraid)

C 26 (ex-. . .)



C 25

P. Voss, 10-82

D: 86.2 tons (100 ft) S: 20 kts Dim: 35.0 × 5.0 × 1.7 A: 1/12.7-mm mg M: 2 MTU 12V493 diesels; 2 props; 1,800 hp Range: 1,400/12 Man: 12 tot.

REMARKS: Transferred 16-1-74.

◆ 1 ex-German customs launch

C 27 (ex-Brunsbuttel) Bldr: Buschmann, Hamburg, 1953

D: 105 tons (fl) S: 16 kts Dim: 29.5 × 5.2 × 1.6 A: 1/12.7-mm mg M: 2 MWM TRM 134S diesels; 2 props; . . . hp Man: 9 tot.

REMARKS: Purchased in 1974.

◆ 2 small patrol craft Bldr: Guy Coucher, France (In serv. 1979)

APHRODITE KIKLAN

D: Approx. 10 tons (fl) S: . . . Dim: . . . \times \times . . . A: 2/7.62-mm mg ($I \times 2$) Electron Equipt: Radar: 1/Decca 110 M: 2 diesels; 2 props; . . . hp

♦ 1 British RAF 1300-series pinnace general-purpose tender

M: 2 Rolls-Royce C6 diesels; 2 props; 190 hp Man: 5 tot.

Remarks: Also transferred was an RAF 1600-series range safety craft; 12 tons, $13.1 \times 4.0 \times 1.2$, 16 kts.

MAURITANIA

Islamic Republic of Mauritania

Personnel: (1984): 320 tot.

MERCHANT MARINE (1984): 40 ships - 15,152 grt

Naval Aviation: Two Piper Cheyenne II, twin-turboprop aircraft were delivered 1981 for coastal surveillance duties. Capable of 7-hour patrols (1,525 n.m.), they have a belly-mounted Bendix RDR 1400 radar.

PATROL BOATS AND CRAFT

♦ 1 French PATRA class Bldr: C. N. Auroux, Arcachon

Laid down L In serv.

P 411 Dix Juillet 15-2-81 3-6-81 1-11-81 (ex-Rapière, P 674)



Dix Juillet (P 411)

C. N. Auroux, 1982

Remarks: Built on speculation, acquired by French Navy, and then sold to Mauritania, commissioning 14-5-82.

♦ 3 Spanish Barcelo class Bldr: Bazán, San Fernando

In serv. In serv. In serv. P 362 EL VIAZ 12-79 P 363 EL BEG 5-79 P 364 EL KENZ 8-82

D: 134 tons (fl) **S:** 36.5 kts **Dim:** 36.2 × 5.8 × 1.75

A: 1/40-mm AA — 2/20-mm Electron Equipt: Radar: 1/Raytheon 1620

M: 2 MTU MD 16V538 TB90 diesels; 6,000 hp Electric: 330 kVA

Fuel: 18 tons Range: 1,200/17 Man: 3 officers, 16 men

Remarks: Delivery of the first two was greatly delayed when they collided on trials, 12-78. The third unit was ordered in 1979, with delivery delayed over financial problems.

MAURITANIA (continued) PATROL BOATS AND CRAFT (continued)

• 2 French 32-meter craft Bldr: Chantiers Navals de l'Estérel, Cannes

DAR EL BARKA (In serv. 9-69) TICHITT (In serv. 4-69)



Tichitt

L'Estérel, 1969

D: 80 tons (fl) S: 28 kts Dim: 32.0 × 5.75 × 1.7

A: 1/20-mm - 1/12.7-mm mg

M: 2 Mercedes-Benz MB820Db/h diesels; 2 props; 2,700 hp

Fuel: 15 tons Range: 1,500/15 Man: 17 tot.

Bldr: Chantiers Navals de l'Estérel, Cannes • 2 French 18-m class

IMAG'NI (In serv. 11-65) SLOUGHI (In serv. 5-68)

D: 20 tons (fl) S: 21 kts (22.7 on trials) Dim: 18.15 (17.03 pp) × 4.03 × 1.1

A: 1/12.7-mm mg M: 2 G.M. 6-71 diesels; 2 props; 512 hp

Range: 400/15 Man: 8 tot.

• 1 service launch

CHINGUETTI

MAURITIUS

MERCHANT MARINE (1984): 18 ships - 41,611 grt

PATROL BOATS

2 Soviet Zhuk class

D: 60 tons (fl) S: 34 kts Dim: 24.0 × 5.0 × 1.8 (props)

A: 4/14.5-mm mg (II × 2) Electron Equipt: Radar: 1/Spin Trough

M: 2 M50 diesels; 2 props; 2,400 hp

Remarks: A gift of the Soviet Union, announced 11-82; uncertain whether delivery has taken place.

1 ex-Indian Ajay-class patrol boat

Bldr: Garden Reach DY, Calcutta, 1961

AMAR



1976

D: 120 tons (160 fl) **S:** 18 kts **Dim:** 35.7 (33.52 pp) \times 6.1 \times 1.5

A: 1/40-mm AA

M: 2 Paxman YHAXM diesels; 2 props; 1,000 hp; 1 Foden FD 6 cruise diesel; 100 hp Fuel: 23 tons Range: 1,000/8; 500/12

Remarks: Retained original name on transfer 4-74. Indian version of British "Ford"class seaward defense boat

Personnel (1984): 23,600 men, including 3,800 Marines

MERCHANT MARINE (1984): 624 ships-1,489,120 grt

(tankers: 43 ships - 698,625 grt)

NAVAL AVIATION: The Mexican Navy operates 12 Grumman HU-16 Albatross amphibious patrol planes (5 of which were purchased in 1982), 1 DNC Buffalo, 1 F-27, 4 DC-3 transports, and 35 light fixed-wing aircraft, including 1 Learjet 24D, 2 T-34 Mentor and 4 Beech F-33 Bonanza trainers. Helicopters include 7 MBB BO-105S, 4 Alouette-III, 5 Hughes 269 A, 4 Bell 47G/J, and 2 Bell HU-1H, plus 10 SA 315 Lama helicopters ordered in 1982 for search-and-rescue duties. Ten Casa 212 light transports with surveillance radars were ordered 3-85 to replace the remaining HU-16s. Two locally designed Tonatiah trainers were completed in 1984 at Veracruz, with 3 more to come.

DESTROYERS

Bldr: Bethlehem Steel, Staten Island 2 ex-U.S. Gearing FRAM I class

| | Laid down | L | In serv. |
|--|-----------|---------|----------|
| IE-03 Quetzalcoatl (ex-Vogelgesang, DD 862) | 3-8-44 | 15-1-45 | 28-4-45 |
| IE-04 Netzahualcoyotl (ex-Steinaker, DD 863) | 1-9-44 | 13-2-45 | 26-5-45 |

D: 2,448 tons light (3,528 fl) S: 30 kts

Dim: 119.03 × 12.52 × 4.45 (6.4 sonar)

A: 4/127-mm DP (II × 2) - 1/ASROC ASW RL (VIII × 1) - 6/324-mm Mk 32 ASW TT (III × 2)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40B (IE-04: SPS-29) Sonar: SQS-23—EW: WLR-1

M: 2 sets G.E. GT; 2 props; 60,000 hp Electric: 1,200 kw

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm2, 454°C Fuel: 650 tons

Remarks: Transferred to Mexico 24-2-82 by sale, as intended replacements for the two Fletcher-class destroyers. Retained ASROC launcher, usually removed in recent USN

1 ex-U.S. Fletcher class

Bldr: Consolidated Steel, Orange, Tex.

Laid down

In serv.

IE-02 Cuitlahuac (ex-John Rodgers, DD 574) 25-1-43



Cuitlahuac (IE-02)

1983

D: 2,050 tons (2,850 fl) **S**: 30 kts **Dim**: $114.73 \times 12.06 \times 5.5$

A: 5/127-mm Mk 30 DP (I × 5) - 14/40-mm AA (IV × 2, II × 3) - 5/533-mm $TT(V \times 1)$

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/Kelvin-Hughes 17/9, 1/Mk 12/22 f.c.

M: 2 sets G.E. GT; 2 props; 60,000 hp Electric: 590 kw

Boilers: 4 Babcock & Wilcox; 39.8 kg/cm2, 454°C Fuel: 650 tons

Range: 4,400/15; 1,260/30 Man: 197 tot.

Remarks: Transferred 8-70. All ASW capability and obsolete U.S. electronics systems now deleted. Has one Mk 37 director for 127-mm guns; five Mk 51 Mod. 2 directors for 40-mm guns. Could make 35 kts when new. Sister Cuauhtemoc (IE-01, ex-Harrison, DD 573) discarded 1982.

FRIGATES

1 ex-U.S. Charles Lawrence^(*) and 3 Crosley class

| 0.000 | | Bldr | Laid down | L | In serv. |
|-------|---|-------------------------------------|-----------|---------|----------|
| IB-05 | Tehuantepec (ex-Joseph M. Auman, APD 117, ex-DE 674) | Consolidated Steel, Orange, Tex. | 8-11-43 | 5-2-44 | 25-4-45 |
| IB-06 | USUMACINTA (ex-Don O. Woods, APD 118, ex-DE 721) | Consolidated Steel, Orange, Tex. | 1-12-43 | 19-2-44 | 28-5-45 |
| IB-07 | COAHUILA (ex- Barber, APD 57, ex-DE 161)* | Norfolk Navy Yd, Norfolk, Va. | 27-4-43 | 20-5-43 | 10-10-43 |
| IB-08 | CHIHUAHUA (ex-Rednour, APD 102, ex-DE 529) | Bethlehem SB, Hingham, Mass. | 30-12-43 | 12-2-44 | 30-12-44 |

FRIGATES (continued)



Coahuila (IB-07)

L. & L. Van Ginderen, 6-74

D: 1,450 tons (2,130 fl) S: 23 kts Dim: 93.26 × 11.28 × 3.83

A: 1/127-mm Mk 30 DP — 6/40-mm AA (II × 3) — IB-07 also: 2/20-mm AA (I × 2)

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 2 sets G.E. GT, turbo-electric drive; 2 props; 12,000 hp

Boilers: 2 "D"-Express; 30.6 kg/cm2, 399°C

Fuel: 350 tons Electric: 680 kw Range: 5,000/15 Man: 204 tot.

Remarks: Former high-speed transports. IB-05 and IB-06 transferred 12-63; IB-02 and IB-08, 17-2-69. Used primarily as patrol ships; no longer carry the four landing craft that were once stowed amidships. Converted to APD while being built. IB-07, with a high bridge and lattice mast aft, is a member of the Charles Lawrence class; the others each have a low bridge and a tripod aft to support the 10-ton-capacity cargo boom. The 127-mm gun has no director, while there are three Mk 51 Mod. 2 directors for the 40-mm antiaircraft. Two others have been lost: California (B-3, ex-Belet, APD 109) went aground 16-1-72, and Papaloapan (B-4, ex-Earheart, APD 113) in 1976.

CORVETTES

* 0 (+4) Aguila class

| | Bldr | Laid down | L | In serv. |
|------|-----------------------|-----------|-------|----------|
| GH N | Tampico NSY No. 1 | 11-83 | | 1987 |
| GH N | Salina Cruz NSY No. 8 | 3-84 | | |
| GH N | 4.4.4 | 4 | 1.4.1 | |
| GH N | | | | |

D: 950 tons (fl) S: 23 kts Dim: 60.0 × 10.5 × . . .

A: 1/57-mm Bofors DP-1/40-mm Bofors AA-1/helicopter

M: 2 MTU 20V956 TB91 diesels; 2 props; 13,320 hp

Man: 45 total

REMARKS: A smaller variant of the Spanish-built Halcon design, with higher speed and heavier armament. Announced 23-6-83, plans called for construction of 9 units at four naval shipyards, two each at Tampico and Salina Cruz. Reduced to four units in 10-84.

• 6 "Halcón" class Bldr: Bazán, San Fernando, Cadiz, Spain

| L | In serv. |
|----------|---|
| 13-12-81 | 10-9-82 |
| 29-1-82 | 15-10-82 |
| 26-2-82 | 3-83 |
| | |
| 12-11-81 | 9-6-82 |
| 26-3-82 | 24-2-83 |
| 23-4-82 | 24-3-83 |
| | 29-1-82 26-2-82 12-11-81 26-3-82 |



Teniente José Azueta (GH-02)

10-83

D: 767 tons (910 fl) S: 21 kts Dim: 67.00 (63.00 pp) × 10.50 × 3.08

A: 1/40-mm AA-1/BO-105S helicopter

Electron Equipt: Radar: 1/Decca AC 1226 - TACAN: SRN-15

M: 2 MTU 20V956 TB91 diesels; 2 props; 13,320 hp

Electric: 710 kw Range: 5,000/18 Man: 10 officers, 42 men

Remarks: Ordered late 1980 for use in patrolling the 200-nautical-mile economic zone. Have been referred to as the "Puma" class. Generally identical to ships built for Argentina, but with more powerful engines and longer helicopter deck. Delivery of GH-04 delayed by accident; originally completed 23-10-82.

• 18 ex-U.S. Auk-class former fleet minesweepers

| | Bldr | L |
|---|------|-----------------------|
| IG-01 Leandro Valle (ex-Pioneer, MSF 105)(1) | A | 26-7-42 |
| IG-02 Guillermo Prieto (ex-Symbol, MSF 123)(2) | В | 2-7-42 |
| IG-03 Mariano Escobedo (ex-Champion, MSF 314)(3) | C | 12-12-42 |
| IG-04 Ponciano Arriaga (ex-Competent, MSF 316)(3) | C | 9-1-43 |
| IG-05 Manuel Doblado (ex-Defense, MSF 317)(3) | C | 18-2-43 |
| IG-06 Sebastian Lerdo De Tejada (ex-Devastator, MSF 318)(3) | C | 19-4-43 |
| IG-07 Santos Degollado (ex-Gladiator, MSF 319)(3) | C | 7-5-43 |
| IG-08 Ignacio De La Llave (ex-Spear, MSF 322)(2) | D | 25-2-43 |
| IG-09 Juan N. Alvarez (ex-Ardent, MSF 340)(3) | C | 22-6-43 |
| IG-10 Melchior Ocampo (ex-Roselle, MSF 379)(4) | E | 29-8-45 |
| IG-11 VALENTIN G. FARIAS (ex-Starling, MSF 64)(5) | C | 15-2-42 |
| IG-12 Ignacio Altamirano (ex-Sway, MSF 120)(2) | F | 29-9-42 |
| IG-13 Francisco Zarco (ex-Threat, MSF 124)(2) | В | 15-8-42 |
| IG-14 Ignacio L. Vallarta (ex-Velocity, MSF 128)(2) | E | 19-4-42 |
| IG-15 Jésus G. Ortega (ex-Chief, MSF 315)(3) | C | 5-1-43 |
| IG-16 Gutierriez Zamora (ex-Scoter, MSF 381)(4j) | E | 26-9-45 |
| IG-18 Juan Aldarma (ex-Pilot, MSF 104)(1) | A | 5-7-42 |
| IG-19 Hermenegildo Galeana (ex-Sage, MSF 111)(1) | G | 21-11-42 |
| | - | and the second second |

Bldrs: A, Pennsylvania Shipyard, Beaumont, Tex.; B, Savannah Machine & Foundry Co., Savannah, Ga.; C, General Engineering and Drydock Co., Alameda, Cal.; D Associated Shipbuilders; E, Gulf Shipbuilding; F, J. H. Mathis, Camden, N.J.; G, Winslow Marine Railway and Shipbuilding, Seattle, Wash.



Ignacio L. Vallarta (IG-14) - bulwarks amidships

G. Arra, 1984

D: 890 tons (1,250 fl) S: 17/18 kts Dim: 67.4 (65.5 wl) × 9.8 × 3.28

A: 1/76.2-mm Mk 22 DP — 4/40-mm AA (II × 2)

Electron Equipt: Radar: 1/SPS-5 or 1/Kelvin-Hughes 14/9, 1/SO-13 M: 2 diesels, electric drive (see Remarks); 2 props; 2,976, 3,118, or 3,532 hp Electric: 300-360 kw Fuel: 216 tons Man: 9 officers, 96 men

Remarks: The numbers in parentheses after the ships' names refer to five different diesels used in propulsion plants: (1) Busch-Sulzer 539; (2) G.M. 12-278; (3) Baldwin VO-8; (4) G.M. 12-278A; (5) Alco 539. Diesels (1) and (5) produce 3,118 hp, (2) and (4)

3,532 hp, and (3) 2,976 hp. All transferred in 1973. All minesweeping and ASW equipment removed. One other unit, Mariano Metamoros (ex-Herald, MSF 101), was converted for use as a surveying ship. Some have a small deckhouse between the stacks; some have no main deck bulwarks. New radars have been added to ships transferred without SPS-5.

• 16 ex-U.S. Admirable-class former fleet minesweepers

| | Bldrs | L |
|------------------------------------|-----------------------------|---------|
| ID-01 DM 01 (ex-Jubilant, MSF 255) | American SB, Lorain, Oh. | 20-2-43 |
| ID-02 DM 02 (ex-Hilarity, MSF 241) | Winslow, Seattle, Wash. | 30-7-44 |
| ID-03 DM 03 (ex-Execute, MSF 232) | Puget Sound, Seattle, Wash. | 22-1-44 |
| ID-04 DM 04 (ex-Specter, MSF 306) | Associated Shipbldrs. | 15-2-44 |
| ID-05 DM 05 (ex-Scuffle, MSF 298) | Winslow, Seattle, Wash. | 8-8-43 |
| ID-06 DM 06 (ex-Eager, MSF 224) | American SB, Lorain, Oh. | 10-6-44 |
| ID-10 DM 10 (ex-Instill, MSF 252) | Savannah Mach., Ga. | 5-3-44 |

1975

CORVETTES (continued)

| | Bldrs | L |
|------------------------------------|--------------------------|----------|
| ID-11 DM 11 (ex-Device, MSF 220) | Tampa SB, Fla. | 21-5-44 |
| ID-12 DM 12 (ex-Ransom, MSF 283) | General Eng. & DD | 18-9-43 |
| ID-13 DM 13 (ex-Knave, MSF 256) | American SB, Lorain, Oh. | 13-3-43 |
| ID-14 DM 14 (ex-Rebel, MSF 284) | General Eng. & DD | 28-10-43 |
| ID-15 DM 15 (ex-Crag, MSF 214) | Tampa SB, Fla. | 21-3-43 |
| ID-16 DM 16 (ex-Dour, MSF 223) | American SB, Lorain, Oh. | 25-3-44 |
| ID-17 DM 17 (ex-Diploma, MSF 221) | Tampa SB, Fla. | 21-5-44 |
| ID-18 DM 18 (ex-Invade, MSF 254) | Savannah Mach., Ga. | 6-2-44 |
| ID-19 DM 19 (ex-Intrigue, MSF 253) | Savannah Mach., Ga. | 8-4-44 |



DM 02 (ID-02)

D: 650 tons (945 fl) **S:** 15 kts **Dim:** 56.24 (54.86 wl) \times 10.06 \times 2.97 A: 1/76.2-mm Mk 22 DP -2/40-mm AA (I \times 2) -6/20-mm AA (I \times 6)

M: 2 Cooper-Bessemer GSB-8 diesels; 2 props; 1,710 hp

Electric: 240 or 280 kw Fuel: 138 tons Man: 9 officers, 86 men

Remarks: All minesweeping and ASW equipment deleted. Three more units were scrapped, and DM 20 was converted into a hydrographic survey ship. DM 04 was transferred 2-73; all others, 1-10-62.

PATROL BOATS

◆ 31 (+4) Azteca class

| CONTRACTOR (SERVICE AND ADDRESS OF A SERVICE AND A SERVICE | | |
|--|-------------|----------|
| | Bldr | In serv. |
| P-01 Andres Quintana Roo | Ailsa | 1-11-74 |
| P-02 Matias De Cordova | Scott | 22-10-74 |
| P-03 Miguel Ramos Arizpe | Ailsa | 23-12-74 |
| P-04 Josè Maria Izazago | Ailsa | 19-12-74 |
| P-05 Juan Bautista Morales | Scott | 19-12-74 |
| P-06 Ignacio Lopez Rayon | Ailsa | 19-12-74 |
| P-07 Manuel Crescencio Rejon | Ailsa | 4-7-75 |
| P-08 Antonio De La Fuente | Ailsa | 4-7-75 |
| P-09 Leon Guzman | Scott | 7-4-75 |
| P-10 Ignacio Ramirez | Ailsa | 17-7-75 |
| P-11 Ignacio Mariscal | Ailsa | 23-9-75 |
| P-12 HERIBERTO JARA CORONA | Ailsa | 7-11-75 |
| P-13 Josè Maria Mata | Lamont | 13-10-75 |
| P-14 Felix Romero | Scott | 23-6-75 |
| P-15 FERNANDO LIZARDI | Ailsa | 24-12-75 |
| P-16 Francisco J. Mujica | Ailsa | 21-11-75 |
| P-17 Pastor Rouaix Josà Maria | Scott | 7-11-75 |
| P-18 José Maria Del Castillo Velasco | Lamont | 14-1-75 |
| P-19 Luis Manuel Rojas | Lamont | 3-4-76 |
| P-20 Josè Natividad Macias | Lamont | 2-9-76 |
| P-21 ESTEBAN BACA CALDERON | Lamont | 18-6-76 |
| P-22 General Ignacio Zaragoza | Vera Cruz | 1-6-76 |
| P-23 Tamaulipas | Vera Cruz | 1978 |
| P-24 YUCATAN | Vera Cruz | 1978 |
| P-25 Tabasco | Vera Cruz | 1-1-79 |
| P-26 Veracruz | Vera Cruz | 1-1-79 |
| P-27 Campeche | Vera Cruz | 1-1-79 |
| P-28 Puebla | Vera Cruz | 1-1-79 |
| P-29 Margarita Maza De Juarez | Salina Cruz | 1-79 |
| P-30 Leona Vicario | Salina Cruz | 1-79 |
| P-31 Josefa Ortiz De Dominguez | Salina Cruz | 1-79 |
| P-32 N | | |
| P-33 N | | |
| P-34 N | | |
| P-35 N | 4.47.4 | 97979 |
| | | |

D: 115 tons (165 fl) **S:** 23 kts **Dim:** 36.50 (30.94 pp) \times 8.6 \times 2.0 A: 1/7.62-mm mg

M: 2 Ruston-Paxman Ventura 12-cyl. diesels; 7,200 hp Electric: 80 kw Range: 2,500/12 Man: 2 officers, 22 men

REMARKS: Original order for 21 placed 27-3-73 with Associated British Machine Tool Makers, Ltd., which subcontracted the actual construction and assisted with the construction of another 11 in Mexico. Four additional units ordered 23-6-83.



Andres Quintana Roo (P-01) - prior to arming

Ailsa Shipbldg., 1975

PATROL CRAFT

♦ 10 Olmeca class Bldr: Acapulco NSY, Mexico (In serv. 1979-84)

D: . . . S: 25 kts Dim: 15.0 × . . . × . .

A: 1/20-mm AA M: 2 Cummins VT-series diesels; 800 hp Man: 7 tot.

Remarks: Glass-reinforced plastic construction. Puebla, the last of a first series, commissioned 22-2-83. Five additional ordered 23-6-83 and delivered by end 1984. Additional units planned.

Bldrs: Astilleros de Tampico (IF-01, IF-04); Iscacas SY, 4 Polimar class Guerrero (IF-02, IF-03)

| | L | | L |
|-----------------|------|-----------------|------|
| IF-01 POLIMAR 1 | 1962 | IF-03 Polimar 3 | 1966 |
| IF-02 POLIMAR 2 | 1966 | IF-04 Polimar 4 | 1968 |



Polimar 1

D: 57 tons (fl) **S:** 16 kts **Dim:** $20.5 \times 4.5 \times 1.3$ A: 2/13.2-mm mg (II × 1) M: 2 diesels; 2 props; 450 hp

Bldr: Astilleros de Tampico • 2 Azueta class

IF-06 AZUETA (L: 1959) IF-07 VILLAPANDO (L: 1960)

D: 80 tons (85 fl) **S:** 12 kts **Dim:** $26.0 \times 4.9 \times 2.1$

A: 2/13.2-mm mg (II × 1) M: 2 Superior diesels; 2 props; 600 hp

RIVER PATROL CRAFT

♦ 8 AM-1 class Bldrs: Astilleros de Tampico (4); Vera Cruz SY (4)(L: 1960-62) AM-1 TO AM-8 (IF-11 to IF-18)

D: 37 tons (fl) S: 6 kts Dim: 17.7 × 5.0 × . . . A: . . . M: Diesels

AUXILIARIES

HYDROGRAPHIC SURVEY SHIPS

♦ 1 ex-U.S. Robert D. Conrad-class oceanographic research ship

Bldr In serv. Christy Corp., Wisconsin 5-11-62 H-05 ALTAIR (ex-James M. 19-5-62 Gillis, AGOR 4)

D: 1,200 tons (1,380 fl) **S:** 13.5 kts **Dim:** $63.7 \times 11.4 \times 6.3$ Electron Equipt: Radar: 1/Raytheon TM 1600/6X; 1/TM 1660/123 M: 2 Caterpillar D-378 diesels; electric drive; 1 prop; 1,000 hp

Electric: 850 kw Fuel: 211 tons Range: 10,000/12 Man: 26 crew, 18 scientists

REMARKS: Returned to U.S. Navy by University of Miami in 1980 and laid up, until lease to Mexico on 15-6-83; Mexico bore the expense of subsequent reactivation. The large stack contains a 620-hp gas turbine generator set to drive the main shaft at speeds up to 6.5 kts for experiments requiring "quiet" sea conditions. Also has a retractable electric bow-thruster/propulsor, which can drive the ship to 4.5 kts. Refitted and recommissioned 27-11-84.

◆ 1 ex-U.S. Admirable-class former minesweeper Steel, Ore.

Bldr: Willamette Iron &

H-2 Oceanografico (ex-DM 20, ex-Harlequin, MSF 365)

Remarks: Launched 3-6-44. Data as for corvettes, except for displacement, which is approximately 900 tons (full load); no armament. Converted 1976-78.

HYDROGRAPHIC SURVEY SHIPS (continued)

 1 ex-U.S. Auk-class former minesweeper meda, Cal. Bldr: General Eng. & DD, Ala-

H-1 MARIANO MATAMOROS (ex-Herald, MSF 101)

Laid down L In serv. 14-3-42 4-7-42 23-3-43



Mariano Matamoros (H-1)

G. Arra, 1977

Remarks: Data generally as for corvette version. Has Busch-Sulzer BS539 diesels; 3,118 hp. No armament. Large deckhouse built around after stack with a portable facility for aerological balloon-launching atop it. Oceanographic crane at stern. Radars are one SPS-5 and one Kelvin-Hughes 14/9.

Note: H-1 or H-2 was to strike when H-05 became operational.

REPAIR SHIP

♦ 1 ex-U.S. Fabius-class former aircraft repair ship

IA-05 GENERAL VICENTE GUERRERO American Bridge, Pa. 25-3-45 27-6-45 (ex-Megara, ARVA 6, ex-LST 1095)



General Vicente Guerrero (IA-05)

L. & L. Van Ginderen, 7-84

D: 4,100 tons (fl) S: 11.6 kts Dim: 100.0 (96.3 wl) × 15.24 × 3.4 A: 8/40-mm AA (IV × 2) M: 2 G.M. 12-567A diesels; 2 props; 1,700 hp Electric: 520 kw Fuel: 474 tons Range: 10,000/10 Man: 250 tot.

Remarks: Transferred 1-10-73. Originally intended for repairing aircraft airframes.

One 10-ton boom. Two Mk 51 Mod. 2 GFCS for the 40-mm AA.

TRANSPORTS

• 0 (+2) new construction

| | Bldr | Laid down | L | In serv. |
|------|-----------------------|-----------|---|----------|
| IA N | Tampico NSY No. 1 | * * * | | |
| IA N | Salina Cruz NSY No. 8 | | | |

Remarks: Ordered 1984 as troop transports, vehicle carriers, transports for construction materials, food, and hospital equipment and to act as floating infirmaries and civil disaster relief ships. Will replace IA-01 and IA-02. First was to complete by end 1985, but schedule does not seem to have been met.

• 1 Mexican built

Bldr: Ulua SY, Vera Cruz (In serv. 1959)

B-2 ZACATECAS

D: 780 tons **S**: 10 kts **Dim**: $47.5 \times 8.2 \times 2.8$

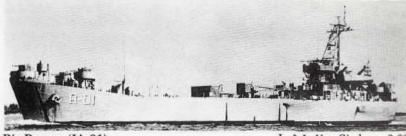
A: 1/40-mm AA -2/20-mm AA (I \times 2)

M: 1 M.A.N. diesel; 1 prop; 560 hp Man: 13 officers, 37 men

Remarks: Was scheduled to strike at end 1985.

• 2 U.S. LST 542-class former landing ships

| | Bldr | L | In serv. |
|------------------------------|--------------------|---------|----------|
| IA-01 Rio Panuco | Bethlehem Steel, | 9-3-44 | 31-3-44 |
| (ex-Park Co., LST 1077) | Hingham, Mass. | | |
| IA-02 MANZANILLO | Chicago Bridge & | 18-4-45 | 8-5-45 |
| (ex-Clearwater Co., LST 602) | Iron, Seneca, Ill. | | |



Rio Panuco (IA-01)

L. & L. Van Ginderen, 3-82

D: 1,625 tons (4,100 fl) S: 11.6 kts Dim: $100.0 \times 96.3 \times 15.24 \times 3.4$ A: 8/40-mm AA ($II \times 2$, $I \times 4$)—IA-02: None Electric: 300 kw Range: 6,000/11 Man: 130 men, 170 troops/passengers

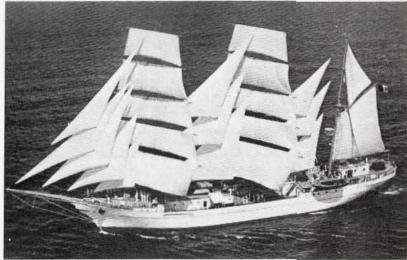
Remarks: Transferred 20-9-71 and 25-2-72. Intended as disaster relief ships. IA-02 had been used in Arctic Supply by the Military Sealift Command and has two cargo kingposts, no armament, and an ice-reinforced waterline forward.

TRAINING SHIPS

◆ 1 sail-training ship Bldr: Ast. y Talleres Celaya, Bilbao, Spain

Laid down L In serv.

CUAUHTEMOC 27-4-81 . . . 11-12-82



Cuauhtemoo

Ingenieria Naval, 8-83

In serv.

D: 1,200 tons (fl) **S:** 15 kts **Dim:** 90.0 (67.0 pp) \times 10.6 \times 4.2 **M:** 1 G.M. 12V149 diesel; 1 prop; 750 hp **Man:** 90 tot.

Remarks: Ordered 1980.

♦ 1 ex-U.S. Edsall-class training frigate

Bldr: Brown SB, Houston, Tex.

Laid down L IA-06 Manuel Azueta (ex-*Hurst*, DE 250) 27-1-43 14-4-43



Manuel Azueta (IA-06)

L. & L. Van Ginderen, 7-81

D: 1,200 tons (1,590 fl) **S:** 21 kts **Dim:** 93.26 \times 11.15 \times 3.73 **A:** 3/76.2-mm Mk 22 DP (I \times 3) — 8/40-mm AA (IV \times 1, II \times 2)

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/Kelvin-Hughes 17/9, 1/Mk 26 M: 4 Fairbanks-Morse 38D%, 10-cyl. diesels; 2 props; 6,006 hp

Electric: 680 kw Fuel: 258 tons Range: 13,000/12

Man: 15 officers, 201 men

Remarks: Transferred 1-10-73. Former destroyer escort. Used as training ship for the Gulf Fleet. Has one Mk 52 radar fire-control director and one Mk 51 rangefinder for the 76.2-mm guns, and three Mk 51 Mod. 2 directors for the 40-mm AA.

MEXICO (continued)

TRAINING SHIPS (continued)

 1 former frigate Bldr: Union Naval de Levante, Valencia, Spain

Laid down L In serv. IB-01 DURANGO 28-6-35 1936 1934

D: 1,600 tons (2,000 fl) S: 18 kts Dim: 78.2 × 11.2 × 3.1 A: 2/102-mm (I × 2) -2/57-mm (I × 2) -4/20-mm AA (II × 2)

M: 2 Enterprise DMR 38 diesels; electric drive; 2 props; 5,000 hp

Fuel: 140 tons Range: 3,000/12 Man: 24 officers, 125 men

REMARKS: Originally built as an armed transport with accommodations for 20 officers, 450 men, and a number of horses. Steam turbine propulsion plant replaced 1967. Immobile as a training hulk for new recruits, but in 1982 it was announced that she was to be rehabilitated for seagoing training and VIP cruising duties.

TUGS

♦ 4 ex-U.S. Abnaki-class fleet tugs Bldrs: IA-17, United Engineering, Alameda, Cal.; others, Charleston SB & DD, S.C.

| Laid down | L | In serv. |
|-----------|--------------------------------|---|
| 26-7-42 | 23-12-42 | 29-9-43 |
| 24-8-43 | 29-1-44 | 27-5-44 |
| 28-11-42 | 22-4-43 | 15-11-43 |
| 23-5-43 | 5-10-43 | 25-3-44 |
| | 26-7-42 24-8-43 28-11-42 | 26-7-42 23-12-42 24-8-43 29-1-44 28-11-42 22-4-43 |

D: 1,325 tons (1,675) fl) S: 16.5 kts Dim: 62.48 × 11.73 × 4.67

A: 1/76.2-mm DP Electron Equipt: Radar: 1/LN-66

M: 4 Busch-Sulzer BS539 diesels, electric drive; 1 prop; 3,000 hp

Electric: 400 kw Fuel: 304 tons Range: 7,000/15; 15,000/8 Man: 85 tot.

Remarks: IA-17 transferred 1-8-78, the others on 30-9-78. Unarmed on delivery. Used on patrol duties and as rescue tugs.

♦ 2 ex-U.S. Maritime Administration V-4 class Bldr: Pendleton SY, New Orleans (In serv. 1943-44)

IA-12 R-2 (ex-Montauk) IA-13 Rf-3 (ex-Point Vicente)

D: 1,825 tons (fl) S: 14 kts Dim: 59.23 × 11.43 × 5.72

A: 1/76.2-mm Mk 22 DP - 2/20-mm AA

M: 2 Enterprise diesels; 2 Kort-nozzle props; 2,250 hp Fuel: 566 tons

Range: 19,000/14 Man: 90 tot.

Remarks: Transferred 6-69. Sister R-4 lost in 1973; R-6 discarded in 1970. R-1 in 1978, and R-5 in 1979.

SERVICE CRAFT

2 ex-U.S. 174-foot-class harbor fuel lighters

Bldr In serv. IA-03 AGUASCALIENTES J. H. Mathis, Camden, N.J. 3-4-43 15-11-43 (ex-YOG 6) IA-04 TLAXCALA G. Lawley, Neponset, Mass. 3-11-43 27-11-43 (ex-YO 107)

D: 440 tons (1,480 fl) S: 8 kts Dim: 53.0 × 9.75 × 2.5 A: 1/20-mm AA M: 1 or 2 diesels; 1 prop; 500-600 hp Man: 5 officers, 21 men

Remarks: Transferred 8-64. Cargo capacity: 980 tons (6,570 bbl).

• 2 yard tugs

PRAGMAR PATRON

Remarks: Bought in 1973.

♦ 1 ex-U.S. ARD-12-class floating dry dock

Bldr In serv. N. (ex-ARD 15) Pacific Bridge, Alameda, Cal. 1-44 Lift capacity: 3,500 tons Dim: 149.87 × 24.69 × 1.73 (light)

Remarks: Transferred 4-71 on loan; purchased 1981.

♦ 2 ex-U.S. ARD-2-class floating dry docks Bldr: Pacific Bridge, Alameda, Cal.

N. (ex-ARD 2)(In serv. 4-42) N. (ex-ARD-11)(In serv. 10-43) Lift capacity: 3,500 tons Dim: $148.0 \times 21.64 \times 1.6$ (light)

Remarks: Transferred 8-63 and 6-74.

◆ 1 ex-U.S. small auxiliary floating dry dock Bldr: Doullut & Ewin, Mobile, Ala.

N. (ex-AFDL 28)(In serv. 8-44)

Lift capacity: 1,000 tons Dim: 60.96 × 19.51 × 1.04 (light)

Remarks: Transferred 1-73.

• 7 ex-U.S. floating cranes

(ex-YD 156) (ex-YD 179) (ex-YD 183) (ex-YD 203) (ex-YD 157) (ex-YD 180) (ex-YD 194)

Remarks: Transferred 1964-71; purchased 7-78 (except YD 179, 194).

• 1 ex-U.S. pile driver

N. (ex-YPD 48)

REMARKS: Transferred 8-68.

♦ 7 Class I-D oil-spill recovery boats Bldr: Marco, Seattle, Wash. (In serv.

S: 15 kts Dim: 11.4 × 3.08 × . . . M: 2 G.M. 4-53 diesels; 2 outdrives; 240 hp

Remarks: Use Marco Filterbelt recovery system; speed 2 kts when operating.

MONTSERRAT

MERCHANT MARINE (1984): 1 ship - 711 grt

MONTSERRAT POLICE FORCE

PATROL CRAFT

 1 glass-reinforced plastic-hulled Bldr: Brooke Marine, Lowestoft, U.K.

EMERALD STAR (In serv. 1971)

D: 15 tons S: 22 kts Dim: 12.0 × . . . × . .

A: 3/7.62-mm mg Electron Equipt: Radar: 1/Decca . . . nav.

M: 2 diesels; 2 props; 740 hp Man: 4 tot.

Remarks: Refitted and re-engined 1983.

MOROCCO

Kingdom of Morocco

Personnel (1984): 1,800 men, including 58 officers and 260 senior petty officers.

Merchant Marine (1984): 261 ships - 433,893 grt (tankers: 18 ships - 176,638 grt)

Note: Morocco is seeking to renew and expand its present forces. Discussions have been held with the Netherlands for the building of four Fatahillah-class light frigates and with Frederikshavn SY, Denmark, in 6-85 for the construction of one "Osprey" class offshore patrol boat: 390 tons (fl); 20 kts; $49.98 \times 10.50 \times 2.70$ m, powered by 2 Alpha 16V-23L-VO diesels, 4,680 hp; 1/40-mm AA, 15 crew. No firm orders are known to have been placed.

FRIGATE

 1 Spanish Descubierta class Bldr: Bazán, El Ferrol

Laid down In serv. 501 COLONEL ERRHAMANI 20-3-79 26-2-82 28-3-83



Colonel Errhamani (501)

French Navy, 1983

FRIGATE (continued)

D: 1,270 tons (1,479 fl)
 S: 26 kts
 Dim: 88.88 (85.8 pp) × 10.4 × 3.25 (3.7 fl)
 A: 4/MM 38 Exocet—1/Albatros SAM syst. (24 Aspide missiles) — 1/76-mm
 OTO Melara DP — 2/40-mm AA (I × 2) — 1/375-mm Bofors ASW RL (II × 1, 24 rockets) — 6/324-mm ASW TT (III × 2)

Electron Equipt: Radar: 1/DA-05, 1/ZW-06, 1/WM 25/41 (all H.S.A.) Sonar: Raytheon DE 1160B

EW: ELT 715 intercept/jammer M: 4 Bazán-MTU 16MA956 TB91 diesels; 2 CP props; 18,000 hp

Electric: 1,810 kw Fuel: 150 tons

Range: 4,000/18 (one engine) Man: 100 tot.

Remarks: Ordered 14-6-77. Carries 600 rds 76-mm. Has fin stabilizers.

PATROL BOATS

| • 4 (+3+3) Spanish Lazaga | Bldr: Bazán, Cadi | |
|----------------------------|-------------------|----------|
| | L | In serv. |
| 304 COMMANDANT AL KHATTABI | 21-7-80 | 3-6-81 |
| 305 Commandant Boutouba | | 11-12-81 |
| 306 COMMANDANT EL HARTI | | 25-2-82 |
| 307 COMMANDANT AZOUGGARH | | 2-8-82 |
| | | |



Commandant Azouggarh (307)

L. & L. Van Ginderen, 12-82

D: 303 tons (420 fl)
 S: 29.6 kts
 Dim: 57.40 (54.4 pp) × 7.60 × 2.70
 A: 4/Exocet SSM-1/76-mm OTO Melara DP-1/40-mm AA-2/20-mm AA

(I×2)

Electron Equipt: Radar: 1/Raytheon 1620, 1/H.S.A. WM 25

M: 2 Bazán-MTU MA16V956 TB91 diesels; 2 props; 7,780 hp

Electric: 405 kVA Range: 700/27; 3,000/15 Man: 41 tot.

Remarks: Ordered 14-6-77. Carry 300 rds 76-mm 1,472 rds 40-mm, 3,000 rds 20-mm ammunition. Have added fuel capacity over Spanish Navy version. CSEE Naja optical director aft. Frequently carry only two MM 38. Three (+3 options) ordered 2-10-85 for offshore patrol; see addenda for details.

◆ 2 French PR-72 type Bldr: SFCN, Villeneuve-la-Garenne

L In serv. L In serv. 302 Оква 10-10-75 16-12-76 303 Твікі 2-2-76 2-77



Triki (303)

G. Gyssels, 10-82

D: 370 tons (440 ft) S: 28 kts (at 413 tons) Dim: 57.0 (54.0 pp) × 7.6 × 2.5 A: 1/76-mm OTO Melara DP — 1/40-mm Bofors AA

M: 4 AGO 16ASHR diesels; 2 props; 11,040 hp Electric: 360 kw

Range: 2,500/16 Man: 5 officers, 48 men

Remarks: Ordered in 6-73. Have 2 CSEE optronic gun directors.

♦ 1 Al Bachir class Bldr: Constr. Méc. de Normandie (CMN), Cherbourg

22 AL BACHIR 6-65 25-2-67 4-67



Al Bachir - wearing old number

D: 124.5 tons (light)(153.5 fl) S: 25.5 kts Dim: $40.6 (38.0 \text{ pp}) \times 6.35 \times 1.4$ A: 2/40-mm - 2 mg M: 2 SEMT-Pielstick 12 PA diesels; 2 props; 3,600 hp Fuel: 21 tons Range: 2,000/15 Man: 3 officers, 20 men

♦ 1 French Fougueux class Bldr: Constr. Méc. de Normandie, Cherbourg

Laid down L In serv. 32 LIEUTENANT RIFFI 5-63 1-3-64 5-64

D: 311 tons (374 fl) S: 19 kts Dim: 52.95 (51.82 pp) × 7.04 × 2.01 A: 2/40-mm AA M: 2 SEMT-Pielstick diesels; 2 CP props; 3,600 hp Range: 2,000/15; 3,000/12 Man: 4 officers, 55 men

REMARKS: 1/76.2-mm gun and all ASW ordnance have been removed.

♦ 1 ex-French patrol boat Bldr: Chantiers Navals de l'Estérel, Cannes

11 EL Sabiq (ex-P 762, ex-VC 12)(L: 13-8-57)

D: 60 tons (80 fl) S: 28 kts Dim: $31.77 \times 4.7 \times 1.7$ Range: 1,500/15 A: 2/20-mm AA M: 2 Mercedes-Benz diesels; 2 props; 2,700 hp Man: 17 tot.

REMARKS: Transferred 15-11-60.

♦ 1 French Sirius-class former minesweeper Bldr: Penhoët, St. Nazaire

51 Tawfic (ex-Aries, M 758) (L: 31-3-56)

D: 365 tons light (440 fl) S: 15 kts Dim: 46.40 (42.70 pp) × 8.55 × 2.50 A: 1/40-mm AA — 1/20-mm AA Electron Equipt: Radar: 1/DRBN-31 M: 2 SEMT-Pielstick 16 PA-1-175 diesels; 2 props; 2,000 hp

Fuel: 48 tons Range: 3,000/10 Man: 38 tot.

Remarks: Loaned by the French Navy 28-11-74 for a period of four years, renewed 1978 and then made permanent on 30-9-80. Wood-planked hull on aluminum-alloy fran-ing. Sweep gear removed.

PATROL CRAFT

| • 6 French | P 92 type | Bldr: C | MN, Cherbourg | | |
|------------|-----------|----------|---------------|---------|----------|
| | L | In serv. | | L | In serv. |
| EL WACIL | 12-6-75 | 9-10-75 | EL KHAFIR | 21-1-76 | 16-4-76 |
| EL JAIL | 10-10-75 | 3-12-75 | EL HARIS | 31-3-76 | 30-6-76 |
| El Mikdam | 1-12-75 | 30-1-76 | ESSAHIR | 2-6-76 | 16-7-76 |



El Wacil

CMN, 1975

D: 89 tons S: 28 kts Dim: 32.0 × 5.35 × 1.7 (1.42 hull) A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca

M: 2 MGO 12 V BZSHR diesels; 2,700 hp Range: 1,200/15 Man: 12 tot.

Remarks: Contract, 2-74. Laminated-wood hull. Six additional sisters were reported ordered 6-85 for the Customs Service.

AMPHIBIOUS WARFARE SHIPS

3 French Champlain-class medium landing ships Bldr: Dubigeon, Normandy

| | In serv. |
|-----------------------------|----------|
| 402 DAOUD BEN AICHA | 28-5-77 |
| 403 Ahmed Es Sakali | 9-77 |
| 404 Abou Abdallah El Ayachi | 12-78 |
| | |

D: 750 tons (1,305 fl) **S**: 16 kts **Dim**: 80.0 (68.0 pp) \times 13.0 \times 2.4 mean **A**: 2/40-mm AA (I \times 2) — 2/81-mm mortars (I \times 2)

MOROCCO (continued) AMPHIBIOUS WARFARE SHIPS (continued)



Abou Abdallah El Ayachi (404)

French Navy, 1984

M: 2 SACM diesels; 2 CP props; 1,800 hp Range: 4,500/13 Man: 30 officers, 54 men

Remarks: Can carry 133 troops and about 12 vehicles. Helicopter platform aft.

♦ 1 French EDIC-class utility landing craft serv. 1965)

Bldr: C. N. Franco-Belges (In

401 LIEUTENANT MALGHAGH



Lieutenant Malghagh—wearing old number

1977

D: 292 tons (642 fl) **S:** 8 kts **Dim:** $59.0 \times 11.95 \times 1.3$ (1.62 fl)

A: 2/20-mm AA (I × 2) - 1/120-mm mortar (fwd)

M: 2 MGO diesels; 2 props; 1,000 hp Range: 1,800/8 Man: 16 tot.

AUXILIARIES

• 1 training ship

ESSAOUIRA

D: 60 tons

Remarks: Yacht presented by Italy in 1967. Used for training watchstanders.

• 2 former Norwegian cargo ships

Elaigh (ex-. . .) AD DAKHLA (ex-. . .)

D: 1,500 grt S: . . . Dim: . . . × . . . × . . .

A: 2/14.5-mm AA (II × 1) M: . . .

Remarks: Acquired to provide logistic support for operations along the Sahara coast. Four 5-ton cranes.

2 vachts

AKHIR (In serv. 1982) SEQUET EL HAMRA

• 1 harbor launch Bldr: ARCOR, La Teste, France

D: 11 tons (fl) **S:** 17 kts **Dim:** 13.00 (11.30 pp) \times 3.80 \times 1.10

M: 1 Baudouin 12-F11-Sm diesel; 1 prop; 426 hp

Range: 400/ . . . Man: 4 tot.

Remarks: Ordered 1-85. Glass-reinforced plastic construction.

CUSTOMS SERVICE

◆ 0 (+6) French P92-type patrol boats Bldr: CMN, Cherbourg

D: 89 tons **S:** 29 kts **Dim:** 32.00 (30.09 pp) × 5.35 × 1.42 (hull)

A: 2/20-mm AA Electron Equipt: Radar: 1/. . . Range: 1,200/15

M: 2 SACM MGO 175V12 BZSHR diesels; 2 props; 2,700 hp Man: 12 tot.

Remarks: Ordered 6-85. Wooden construction. Six sisters in Navy.

Bldr: ARCOR, La Teste, France 18 patrol craft

D: 14 tons S: 24 kts Dim: 14.20 (12.40 pp) × 4.00 × 1.20 A: 1/7.62-mm mg M: 2 UNI UD18-V8HS diesels; 2 props; 1,120 hp Range: 200/. . . Man: . . .

Remarks: Ordered 6-85. Glass-reinforced plastic construction.

MOZAMBIQUE

People's Republic of Mozambique

Personnel (1985): Approx. 600 total

Merchant Marine (1984): 98 ships - 45,753 grt (tankers: 2 ships - 6,549 grt)

PATROL BOATS AND CRAFT

♦ 2 Soviet S.O.-1 class

D: 190 tons (215 fl) **S**: 29 kts **Dim**: $42.0 \times 6.1 \times 1.9$ (hull)

A: 4/25-mm AA (II × 2) -- 4/RBU-1200 ASW RL (V × 4) -- 2/d.c. racks (24) d.c.) - mines

Electron Equipt: Radar: 1/Pot Head — Sonar: 1/Tamir-11 (HF)

IFF: 1/Dead Duck interrogator, 1/High Pole-A transponder

M: 3 Type 40D diesels; 3 props; 7,500 hp Range: 340/28; 1,900/7 Man: 30 tot.

Remarks: Transferred 6-85. Built 1958-64 and hard-used, they are not likely to be of much combat value. Bad rollers and very noisy.

 10 Indian-design Bldr: Mazagon SY, Goa (In serv. 1984-85)

D: . . . S: 20 kts Dim: 18.0 × 5.0 × . . .

A: . . . M: 2 diesels; 2 props; 1,100 hp Remarks: First four launched together 4-84. Can also be used for towing.

7 Soviet Zhuk class

D: 60 tons (fl) **S:** 34 kts **Dim:** $24.0 \times 5.0 \times 1.8$ (props)

A: 2 or 4/14.5-mm mg (II × 1 or 2) Electron Equipt: Radar: 1/Spin Trough M: 2 M50 diesels; 2 props; 2,400 hp

Remarks: Transferred: 1 in -79, 2 in 10-80, 2 in 10-81, and 2 in 1982.

1 Soviet Poluchat-1 class

D: 90 tons (fl) **S:** 18 kts **Dim:** $29.6 \times 6.1 \times 1.9$ **A:** 2/14.5-mm mg (II \times 1) **M:** 2 M50 diesels; 2 props; 2,400 hp

Range: 450/17; 900/10 Man: 20 tot.

REMARKS: Transferred 1977.

2 Portuguese Jupiter class

D: 32 tons (43.5 fl) **S:** 20 kts **Dim:** $21.5 \times 5.0 \times 1.3$

A: 1/20-mm AA M: 2 Cummins diesels; 2 props; 1,270 hp Man: 8 tot.

Remarks: Operate on Lake Malawi (Lake Nyasa).

◆ 2 Portuguese Bellatrix class

N. (ex-Sirius) N. (ex-Vega)

D: 23 tons S: 15 kts Dim: 20.7 × 4.6 × 1.2

A: 1/20-mm AA Man: 7 tot.

Remarks: Operate on Lake Malawi (Lake Nyasa).

AMPHIBIOUS WARFARE CRAFT

◆ 1 Portuguese Alfange-class landing craft

N. (ex-Cimitarra)

D: 285 tons (635 fl) S: 10 kts Dim: 59.0 × 11.91 × 1.6

A: 2/20-mm AA (I×2) M: 2 MTU MD225 diesels; 2 props; 1,000 hp

Range: 1,800/8 Man: 20 tot.

◆ 2 Portuguese LDM-100-class landing craft

D: 50 tons (fl) S: 9 kts Dim: 15.25 × . . . × . . . M: 2 G.M. diesels; 2 props; 450 hp

AUXILIARIES

Bldr: Mazagon SY, Goa, India 2 small cargo lighters

Remarks: No details available; ordered 1983.

NATO

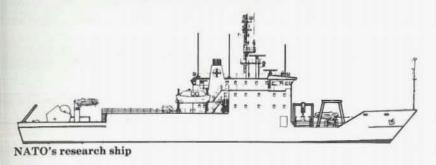
North Atlantic Treaty Organization

Note: The oceanographic research ship described below is the only vessel "owned" jointly by the NATO nations. There is, however, a NATO Standing Force of frigates and destroyers, which would be augmented in time of war by warships from the major signatory nations.

• 1 oceanographic research ship

Bldr: CNR, Genoa

N. . . (In serv. 1986)



D: . . . S: 17 kts (16.3 sust.) Dim: 93.0 × 15.2 × 5.0

Electron Equipt: .

M: 2 GMT diesels, AEG electric drive; 2 props; 5,140 hp — 450-hp electric

auxiliary drive

Range: 8,000/12 Electric: 1,850 kw Man: . . .

Remarks: Will be based at Naples and fly the Italian ensign; operated for SACLANT (Supreme Allied Commander, Atlantic). Intended for acoustic, oceanographic, and hydrographic research. Helicopter platform. Bollard pull: 20 tons.

NETHERLANDS

Kingdom of the Netherlands

Personnel (1983): Approximately 16,800, including Marines, Naval Air Service, and 411 female personnel; 6,500 civilian employees

Merchant Marine (1984): 1,337 ships — 4,585,991 grt (tankers: 77 ships — 1,180,257 grt)

Naval Aviation: The Navy's aircraft are divided into four administrative groups: three maritime patrol squadrons at Valkenburg and one helicopter squadron at Dekoog. Principal types include (as of 7-83): 13 P-3C Orion (2 in storage); 6 BR-1050 Atlantique Mk 1 (grounded); 2 F-27 Maritime; and 22 WG-13 Lynx helicopters

The WG-13 Lynx are of the following subtypes: 6 UH-14A search-and-rescue, delivered in 1976; 9 SH-14B with dipping sonar, ordered in 1976; and 8 SH-14C with

ASQ-81 (V)2 MAD gear, ordered in 1978.

On 8-12-78, the Dutch Navy announced that 13 Lockheed P-3C Orion would be acquired to replace the PH-2S Neptune. The first two were operational in late 1981, and the last became operational in 1984. Two Fokker F-27 Maritime were delivered 9-81 and 2-82 to replace 3 PH-2S in the Netherlands Antilles at Curaço. Two P-3C were to be laid up to save operating funds, according to a 5-85 statement.

Warships In Service, Under Construction, Or Authorized As Of 1 January 1986

| | - | | |
|--|-------------------------------|-------------------------|---|
| | L | Tons (surfaced) | Main armament |
| ♦ 7 (+3) submarines | | | |
| 2 (+3) Walrus 2 Zwaardvis 3 Dolfijn/Potvis | 1984-85 1970-71 1960-65 | 2,300 2,370 1,494 | 6/533-mm TT 6/533-mm TT 8/533-mm TT |
| • 2 destroyers | | | |
| 2 Tromp | 1973-74 | Tons 3,665 | 1/Standard, 8/Harpoon, and 1/Sea Sparrow systems, 2/120-mm DP, 6/ASW TT, 1/ASW helicopter |
| • 13-15 (+9) frigates 0 (+8) M CLASS | 1986- | 2,650 | 4/Harpoon and 1/Sea Sparrow sys- tems, 1/76-mm DP, 6/ASW TT, |

1/helicopter

| 1 (+1) Jacob Van Heemskerck | 1982-83 | 3,000 | 1/Standard, 8/Harpoon, 1/Sea Spar- row, 4/ASW TT |
|--------------------------------|---------|-------|--|
| 10 Kortenaer | 1976-82 | 3,000 | 2/Harpoon and 1/Sea Sparrow sys- tems, 1 or 2/76-mm DP, 4/ASW |
| 2-4 Van Speijk* | 1965-67 | 2,200 | TT, 2/helicopters 2/Harpoon, 2/Sea Cat systems, 1/76-mm DP, ASW weapons, |
| | | | 1/helicopter |

- 5 patrol boats
- 22 (+6) mine warfare ships
- * 4 for sale

WEAPONS AND SYSTEMS

A. MISSILES

surface-to-air

U.S./SM-1 MR Standard on the Tromp-class destroyers and to be on the two Jacob Van Heemskerck-class frigates

U.S. RIM-7M Sea Sparrow on the Tromp-class destroyers and Jacob Van Heemskerck and the Kortenaer-class frigates; British Sea Cat on the Van Speijk-class frigates

♦ surface-to-surface

U.S. Harpoon on the Tromp, Van Heemskerck, Kortenaer, and modernized Van Speijk classes

B. GUNS

120-mm twin-barreled automatic in the Tromp-class destroyers:

Weight: 65 tons

Arc of elevation: 10° to +85°

Muzzle velocity: 850 m/sec.

Direction rate: 25°/s in train, 40°/s in elevation

Rate of fire: 45 rounds/min/barrel

Maximum effective range in surface fire: 13,000 m

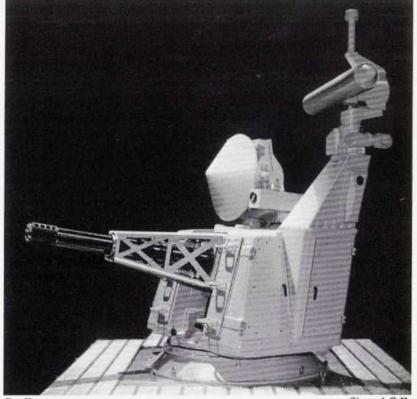
Maximum effective range in antiaircraft fire: 7,000 m

76-mm OTO Melara Compact on the Kortenaer and Van Speijk-class frigates

40-mm Bofors in single Bofors L70, mountings

30-mm SGE-30 "Goalkeeper," using the U.S. General Electric GAU-8A 30-mm gatling gun and EX-30 mounting co-mounted with an H.S.A. track-while-scan radar fire-control system. The latter uses independent I-band search/acquisition and I/K-band tracking radars. The 7-barreled gatling gun has a 4,200 rd/min. maximum rate of fire, 1,190 rds are carried on-mount. Muzzle velocity is 1,021 m/sec. Total weight, with ammunition, is 6,713 kg. The frigate Callenburgh is the first ship to carry "Goalkeeper," which will be installed in the Kortenaer and Jacob Van Heemskerck classes.

20-mm Oerlikon AA in single World-War-II-era 70-cal. and modern 90-cal. 20 F-2 mountings



Goalkeeper

Signaal-G.E

C. ANTISUBMARINE WEAPONS

U.S. Mk 44 and Mk 46 torpedoes on ships and aircraft

U.S. Mk 37 Mod. 2, NT-37C/D and Mk 48 torpedoes on submarines. Additional Mk 48 torpedoes were ordered in 1980. U.S. Honeywell NT-37E torpedoes (reworked Mk 37) are to be acquired.

D. RADARS

All designed and manufactured by Hollandse Signaal Apparaaten (H.S.A.), a division of Phillips:

| Name | Type | Band |
|---------------|----------------------------------|-----------|
| ZW-06 | Navigation/surface search | I |
| ZW-07 | Submarine, nav./surf. search | 4 I |
| LW-02/03 | Long-range air-search | D |
| LW-04 | Long-range air-search | D |
| LW-08* | Long-range air-search | D |
| DA-05, 05A | Combined surveillance | E/F |
| DA-08 | Medium-range air-search | E/F |
| SPS-01 | 3-D air-search | F |
| WM-20/25 | Missile- and gunfire-control | K |
| M-44/45 | Missile- and gunfire-control | |
| SMART† | 3-D air-search | F or I |
| STIR‡ | Missile- and gunfire-control | I/K |
| LIROD-8 | radar, optronic weapon control | |
| * An outender | range version of I W 08 is under | dovolonmo |

* An extended-range version of LW-08 is under development.

† "Signaal Multi-beam Acquisition Radar for Targeting." For the Jacob Van Heemskerck class and possible refit to the Tromp class in place of SPS-01.

‡ U.S. design, built under license. STIR = "Separate Tracking and Illumination Radar"; has 1.8- and 2.9-m-dia. parabolic dish antennas and co-mounted t.v. camera.

E. SONARS

CWE-610, LF, hull-mounted: On the Tromp-class destroyers, and $Van\ Speijk$ -class frigates

SQR-18A: U.S. towed passive linear array on two Van Speijk-class frigates

SQS-505, MF: license-built Canadian: On the Kortenaer-class frigates (PQS-36)

PHS-32, MF: Export sonar, hull-mounted or VDS

PHS-36, MF: On the Jacob Van Heemskerck and "M"-class frigates

Type 184, MF, hull-mounted: On the Van Speijk-class frigates

Octopus: Active/passive submarine array on Walrus class, derived from French Thomson-CSF "Eledone."

F. ELECTRONIC WARFARE

In use are the "Scimitar" J-Band deception and jamming system, "RAPIDS" I-18gHz passive intercept array, and "RAMSES" I/J-Band passive and deceptive repeater equipment. Chaff rocket launchers in use are the British-designed Knebworth/Corvus, 8-tubed, 76.2-mm launcher and the U.S. Mk 36 Super RBOC system with two Hycor 6-tubed Mk 136 launchers.

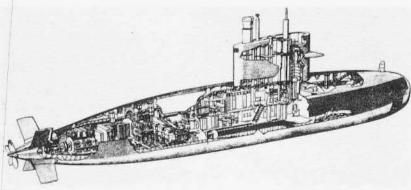
G. DATA-PROCESSING

SEWACO (Sensoren Wapens Commando): built by Hollandse Signaal Apparaaten and centrally directed by a DAISY 1, 2, 3, 4, or 5 digital computer system. It exists in four versions (SEWACO I, II, III, and IV) tailored to the sensors and weapon systems of the ships that carry it.

SINBADS: Submarine tracking system. Can track 5 targets and engage 3 simultaneously.

SUBMARINES

| ♦ 2 (+ 2 + 1) Walrus class | | Bldr: Rotterdamse Droogdok Mij, Rotterdan | | |
|----------------------------|-----------|---|--------|----------|
| | Laid down | L | Trials | In serv. |
| S 801 Walrus | 11-10-79 | 28-10-85 | 4-87 | 1988 |
| S 802 ZEELEEUW | 24-9-81 | 7-86 | 2-88 | 1989 |
| S N | | 404.4 | 1992 | 1992 |
| S N | | *** * | 1992 | 1994 |
| S N | | | **** | 1998 |



Walrus class

Rhine-Schelde-Verolme, 1980

D: 1,900/2,450/2,800 tons **S**: 12/21 kts **Dim**: $67.73 \times 8.40 \times 7.0$

A: 6/533-mm TT fwd. (20 Sub-Harpoon SSM/Mk 48 or NT.37C/O/E torpedoes/mines)

Electron Equipt: Radar: 1/ZW-07 (U.K. Decca Type 1001)

Sonar: Octopus active/passive, U.K. Type 2026 linear passive array

M: Diesel-electric: 3 SEMT-Pielstick 12 PA4V 200, 2,304 diesel generator groups; 1 Holec motor; 1 5-bladed prop; 3,950 surf./5,430 sub. hp (see Remarks)
 Fuel: 310 tons Range: 10,000/9 (snorkel) Man: 7 officers, 43 men

Remarks: First two ordered 19-6-78 and 17-12-79. Second pair ordered 5-1-84. Plans to order a fifth and sixth in 1991 reduced to one in 6-85. Construction of first pair delayed by need to lengthen hull after keels laid in order to accommodate diesel generator sets. Second pair will return to use of Brons-Werkspoor 0-RUB 215X12 diesels. Propulsion plant is on resilient mountings to reduce noise emissions. Each HOLEC a.c./d.c. generator has built-in rectifiers and produces 980 kw. There are three 140-cell batteries. Endurance is 60 days. Periscope depth: 18 m. Torpedo tubes are of the "waterslug" type, capable of launching at any operational depth. Hull construction is of MAREL steel, with single-hull mid-body and double-hull ends; reserve bouyancy is 12%. Will have Gipsy data system, Sperry Mk 29 Mod. 2A inertial navigation system, NAVSAT receiver, and passive EW equipment.

♦ 2 Zwaardvis class Bldr: Rotterdamse Droogdok Mij, Rotterdam

| | Laid down | L | In serv. |
|------------------|-----------|---------|----------|
| S 806 ZWAARDVIS | 7-67 | 2-7-70 | 18-2-72 |
| S 807 Tijgerhaai | 7-67 | 25-5-71 | 20-10-72 |



Zwaardvis (S 806)

Skyfotos, 2-83



Tijgerhaai (S 807)

G. Gyssels, 10-84

D: 2,350/2,408/2,640 tons S: 13/20 kts Dim: 66.92 × 8.40 × 7.10

A: 6/533-mm TT fwd—20 torpedoes Electron Equipt: Radar: 1/ZW-06

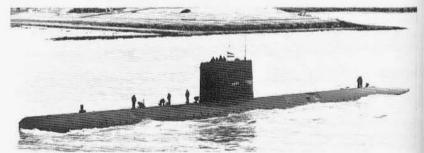
Sonar: . . . M: Diesel-electric: 3 sets Werkspoor RUB 215X12, 1,400-hp diesel generators, 920 kw each; 1 3,800-kw motor; 1 5-bladed prop; 5,100 hp

Range: 10,000/9 (snorkel) Man: 8 officers, 59 men

Remarks: Ordered 24-12-65 and 14-7-66. Based on the U.S. Navy's *Barbel* class, which has a teardrop hull. Use of Dutch equipment necessitated modifications to the original design. The H.S.A.-M8 torpedo-firing system uses a digital computer that permits the simultaneous launching of two torpedoes, one of which may be wire-guided. For silent running, all noise-producing machinery is mounted on a false deck with spring suspension. Three 140-cell batteries. Mid-life refits planned for 1987-88.

• 3 Dolfijn/Potvis class

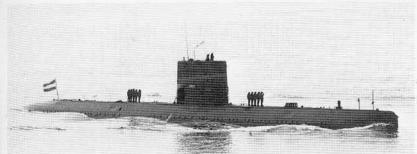
| | Bldr | Laid down | L | In serv. |
|---------------|------------------|-----------|---------|----------|
| S 804 Potvis | Wilton-Fijenoord | 17-9-62 | 12-1-65 | 2-11-65 |
| S 805 TONIJN | Wilton-Fijenoord | 26-11-62 | 14-6-65 | 24-2-66 |
| S 809 ZEEHOND | Rotterdam DDM | 30-12-54 | 20-2-60 | 16-3-61 |



Tonijn (S 805)

G. Gyssels, 9-84

SUBMARINES (continued)



Zeehond (S 809)

L. & L. Van Ginderen, 3-85

D: 1,140/1,510/1,830 tons S: 14.5/17 kts Dim: $79.50 \times 7.84 \times 4.95$ —see Remarks

A: 8/533-mm TT (4 fwd, 4 aft) Electron Equipt: Radar: 1/ZW-06 M: Diesel-electric: 2 SEMT-Pielstick 12 PA4V185 diesels, 1,550 hp each;

2/920-kw electric motors; 2 props; 4,400 hp—see Remarks

Man: 8 officers, 59 men

Remarks: S 804 and S 805 authorized in 1962, S 809 in 1949, S 809, 805: D: 1,509/1,831 tons; Dim: 78.25 × 7.80 × 4.95; 2 M.A.N. 12-V6V 22/30, 12-cylinder diesels, 1,400 hp each. The exterior hull has three parallel interior pressure cylinders, one of which is placed on top of a pair of slightly shorter ones. Diving depth: 300 m. Have two 168-cell batteries. The crew and the armament occupy the top cylinder, and the batteries and diesel engines are mounted in the other two. *Tonijn* received SEMT-Pielstick diesel generator sets during 1978; *Potvis* was given new engines in 1979. Sister *Dolftijn* (S 808) placed in reserve without refit or batteries during 1983 and was stricken 1-2-85 and sold for scrap 22-7-85. S 809 is to strike in 1986-87, S 804 in 1991, and S 805 in 1992.

GUIDED-MISSILE DESTROYERS

♦ 2 Tromp class Bldr: Kon. Mij. de Schelde, Flushing

| | Laid down | L | In serv. |
|---------------------------------|-----------|--------|----------|
| F 801 TROMP | 4-8-71 | 2-6-73 | 3-10-75 |
| F 806 DE RUYTER (ex-Heemskerck) | 22-12-71 | 9-3-74 | 3-6-76 |



Tromp (F 801) - with new chaff RL

R. Neth. N., 1984



De Ruyter (F 806)

R. Neth. N., 1982

D: 3,665 tons (4,308 fl) **S**: 28 kts (30 on trials)

Dim: 138.2 (131.0 pp) × 14.8 × 4.6 (6.6 max.)

A: 4/Harpoon missiles (II \times 2) — 1 Mk 13 missile launcher (I \times 1, 40 SM-1 MR missiles) — 1/NATO Sea Sparrow system (VII \times 1, Mk 29, 60 missiles) — 2/120-mm Bofors DP (II \times 1) — 6/324-mm Mk 32 ASW TT (III \times 2) — 1/Lynx ASW helicopter

Electron Equipt: Radar: 2/Decca 1226 nav., 1/SPS-01, 1/WM-25, 2/SPG-51C Sonar: 1CWE-610, 1/162 (bottom search)

EW: Ramses active/passive array, Mk 36 SRBOC chaff syst. (VI \times 4)

M: COGOG: 2 Rolls-Royce Olympus TM-3B gas turbines, 27,000 hp each; 2 Tyne RM-1C gas turbines, 4,100 hp each, for cruising (18 kts); 2 CP 4-bladed props; 54,000 hp

Electric: 4,000 kw Fuel: 600 tons Range: 5,000/18

Man: 34 officers, 271 men

Remarks: Although the Dutch Navy designates them as frigates, these ships, by virtue of their armament and size, are more closely related to guided-missile destroyers. They have fin stabilizers, and are excellent sea boats. Equipped with an admiral's cabin and command facilities, they can act as flagships. Berthing for enlisted men is in 6-, 9-, or 12-man compartments. The propulsion machinery is arranged in three compartments, forward to aft: 2 Olympus gas turbines, 2 generator sets, and the auxiliary boilers; 2 Tyne gas turbines; 2 generator sets. The 450-V, 3-phase, 60-Hz current is produced by four groups of 1,000-kw generators, each driven by a SMIT/Paxman Valenta RP 200, 12-cylinder diesel; two sets are sufficient for full combat power. There are three auxiliary boilers for heating. Fitted with Harpoon 1977/78; normally carry only 4 (II × 2), but can carry 8 (IV × 2). SEWACO-I data system. New plastic radomes for SPS-01 radar, 1980, called "Kojack." EW system updated on Tromp and LINK 11 data exchange system added; F 806 to follow in 1985. Planned mid-life modernizations canceled; will now receive only an "update" late in the 1980s.

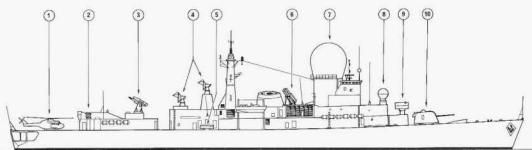
GUIDED-MISSILE FRIGATES

♦ 0 (+4+4) M class Bldr: de Schelde, Vlissingen

| F 827 De Zeven Provincen | Laid down 26-2-85 | L 1986 | In serv. 1988 |
|--------------------------|----------------------|-----------|------------------|
| F 828 N | 6-11-85 | | |
| F 829 N | | | |
| F 830 N | | | |

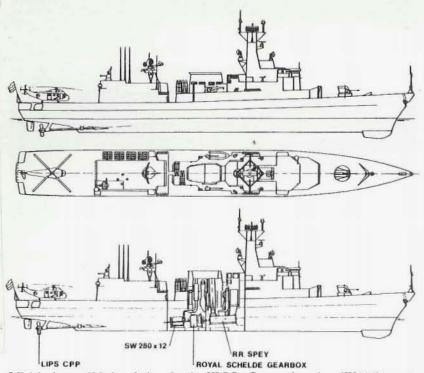
D: 2,650 tons light (3,050 ft) **S:** 29 kts (20 kts on diesels) **Dim:** 122.1 (114.0 pp) × 14.4 (13.1 wl) × 4.25 (6.00 sonar)

A: 4/Harpoon SSM (II \times 2) — VLS Sea Sparrow SAM syst. (16 missiles) — 1/76-mm OTO Melara DP — 1/30-mm Goalkeeper gatling CIWS — 2/20-mm AA (I \times 2) — 4/324-mm ASW TT (II \times 2, fixed) — 1/Lynx helicopter



Tromp 1. Lynx helicopter 2. Two Mk 136 chaff RL 3. Mk 13 missile launcher 4. SPG-51C radars 5. Mk 32 torpedo tubes 6. Harpoon launchers 7. SPS-01 3-D radar 8. WM-25 fire-control radar 9. Sea Sparrow system 10. 120-mm gunmount

GUIDED-MISSILE FRIGATES (continued)



Official scheme of M-class design, showing VLS Sea Sparrow launchers (IV × 4) to port of hangar, and possible 57-mm gun installation forward

Electron Equipt: Radar: 1/Decca 1226, 1/DA-08, 1/LW-08, 1/STIR-18, 1/STIR-24, 1/Goalkeeper

Sonar: PHS-36 (SQS-509) hull-mounted, SQR-18A TASS (provision for)

EW: Ramses passive, Mk 36 SRBOC chaff RL (IV × 2)

M: CODOG: 2 Stork-Werkspoor SWD 280 V-12 cruise diesels, 4,225 hp each; 2 Rolls-Royce SM-1A Spey gas turbines; 2 CP props; 37,540 hp

Electric: 2,500 kw Range: 4,000/19 Man: 16 officers, 121 men

Remarks: First four ordered 29-2-84, three years earlier than planned, to help ship-building industry. Will nominally replace "Roofdier" class, but are far more capable ships; indeed, they are little inferior to the larger Kortenaers. Intended for fisheries patrol and 200-nautical-mile economic zone patrol in peacetime. Accommodations for female crew members incorporated, plus bunks for 30 Marines. Endurance: 30 days.

Will have computer-controlled rudder stabilization system vice fins. Three rubber semi-rigid boats. Two diesel, two gas turbine generator sets: 600 kw each. The Bofors 57-mm SAK-57 Mk II DP gun may be substituted for the 76-mm weapon. DAISY/ SEWACO data system with full LINK 10, 11, and 16 capability.

Second group of four ships ordered 29-6-85; four more planned.

| ♦ 1 (+1) Jacob Van Heemskerck class | | Bldr: de Schelde, Vlissingen | | | |
|-------------------------------------|---|------------------------------|---------|----------|--|
| | .454 | Laid down | L | In serv. | |
| | F 812 Jacob Van Heemskerck (ex-Pieter Floresz) | 21-1-81 | 5-11-83 | 1-86 | |
| | F 813 WITTE DE WITH | 15-12-81 | 25-8-84 | 7-86 | |



Jacob Van Heemskerck (F 812) - note ports in stern for Nixie torpedo decoy L. & L. Van Ginderen, 8-85



Jacob Van Heemskerck (F 812) on trials

L. & L. Van Ginderen, 8-85

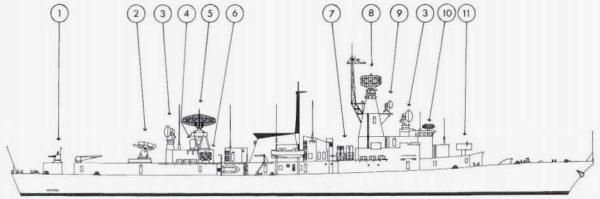


Jacob Van Heemskerck (F 812) on trials

L. & L. Van Ginderen, 8-85

D: 3,000 tons (3,750 fl) S: 30 kts

Dim: 130.20 (121.8 pp) × 14.40 × 4.23 (6.0 props)
A: 8 Harpoon SSM (IV × 2) — 1/Mk 13 Mod. 4 launcher (I × 1, 40 SM-1 MR Standard missiles) - 1/Mk 29 launcher (VIII × 1, 24 Sea Sparrow missiles) -1/30-mm Goalkeeper gatling AA — 4/324-mm ASW TT (II × 2, fixed)



Jacob Van Heemskerck class 1. Goalkeeper 30-mm gatling AA system 2. Mk 13 Mod. 4 launcher for Standard SM-1 MR missiles 3. Modified STIR missile fire-control radars for Standard 4. Satellite communications syst. antennas 5. LW-08 long-range air-search radar 6. U.S. Super RBOC chaff launchers (VI × 4) 7. Harpoon launch cells (IV × 2) 8. DA-05 3-D radar 9. STIR fire-control radar for Sea Sparrow 10. ZW-06 navigational/surface-search radar 11. Mk 29 Sea Sparrow launcher (VIII × 1)

Electron Equipt: Radar: 1/ZW-06, 1/DA-05 or SMART, 1/LW-08, 1/STIR-18, 2/STIR-24, 1/Goalkeeper

Sonar: PHS-36 (SQS-509)

EW: Ramses passive; Mk 36 Super RBOC chaff RL (VI × 4)

M: COGOG: 2 Rolls-Royce Olympus TM-3B gas turbines, 25,800 hp each; 2 Rolls-Royce Tyne RM-1C cruise gas turbines, 4,900 hp each; 2 LIPS CP

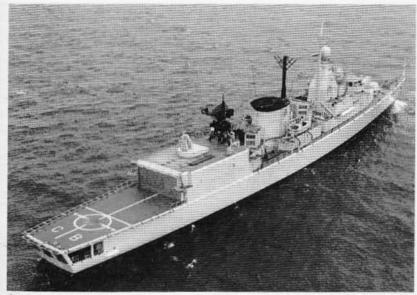
Electric: . . . Range: 4,700/16 (on 1 Tyne turbine)

Man: 176 crew plus 20 flag staff

REMARKS: Built as replacement hulls for the pair with the same pendant numbers (and original names) sold to Greece, but with the basic Kortenaer design modified to replace the helicopter facility with the U.S. Standard missile system. Will act as flagships, permitting the Dutch Navy to operate four escort flotillas in wartime and obviating the need for the originally planned "13th Kortenaer." Have the SEWACO II data system and LINK 11 data-link capability. The DA-05 radar atop the foremast may later be replaced by H.S.A.'s new SMART (Signaal Multi-beam Acquisition Radar for Targeting), and the ships may receive the U.S. SQR-18A TACTASS towed passive hydrophone array. Have the U.S. SLQ-25 Nixie torpedo decoy system.

Bldrs: F 823 and F 824: Wilton-Fijenoord; others: de • 10 Kortenaer class Schelde

| | Laid down | L | In serv. |
|--|-----------|----------|----------|
| F 807 KORTENAER | 8-3-75 | 18-12-76 | 26-10-78 |
| F 808 CALLENBURGH | 30-6-75 | 26-3-77 | 26-7-79 |
| F 809 VAN KINSBERGEN | 2-9-76 | 16-4-77 | 24-4-80 |
| F 810 BANCKERT | 25-2-76 | 30-9-78 | 29-10-80 |
| F 811 PIET HEIN | 28-4-77 | 3-6-78 | 14-4-81 |
| F 816 Abraham Crijnssen | 25-10-78 | 16-5-81 | 26-1-83 |
| F 823 PHILIPS VAN ALMONDE | 1-10-77 | 11-8-79 | 2-12-81 |
| F 824 BLOYS VAN TRESLONG | 1-5-78 | 15-11-80 | 25-11-82 |
| F 825 Jan Van Brakel | 16-11-79 | 16-5-81 | 14-4-83 |
| F 826 PIETER FLORISZ (ex-Willem Van Der Zaan) | 15-1-80 | 8-5-82 | 1-10-83 |



Callenburgh (F 808) - with prototype Goalkeeper atop hangar R. Neth. N., 9-84



Jan Van Brakel (F 825)

G. Gyssels, 3-85



Piet Hein (F 811)

L. & L. Van Ginderen, 9-83

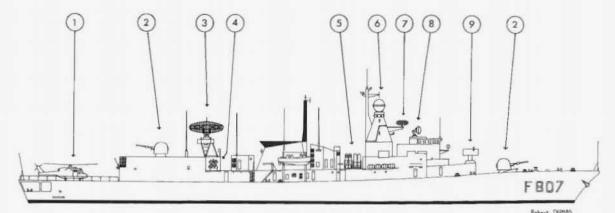


Kortenaer (F 807)

L. & L. Van Ginderen, 5-85

D: 3,000 tons (3,786 fl) **S:** 30 kts (20, on 2 Tyne turbines) **Dim:** 130.2 (121.8 pp) \times 14.4 \times 4.4 (6.0 props)

A: 8/Harpoon SSM (IV × 2) — 1/NATO Sea Sparrow system (VIII × 1, 24 missiles, Mk 29 launcher) — 1/76-mm OTO Melara DP (I × 2) — 1/40-mm Bofors AA — 4/324-mm Mk 32 ASW TT (II × 2) — 1 or 2/WG-13 Lynx ASW helicopters



Kortenaer class 1. Lynx helicopter 2. 76-mm OTO Melara DP forward, 40-mm AA aft 3. LW-08 air-search radar 4. Knebworth/Corvus chaff RL (VIII × 2) 5. Harpoon launch cells (II × 2) 6. WM-25 track-while-scan fire-control radar 7. ZW-06 navigational/surface-search radar 8. STIR fire-control radar 9. Mk 29 Sea Sparrow launcher $(VIII \times 1)$

Electron Equipt: Radar: 1/LW-08, 1/ZW-06, 1/WM-25, 1/STIR

Sonar: 1/SQS-505

EW: F 807-F 811: Sphinx passive system; later ships: Ramses active/passive system; all: 2/Knebworth/Corvus chaff

RL (VIII × 2) or Mk 36 SRBOC (VI × 2)

M: COGOG: 2 Rolls-Royce Olympus TM-3B gas turbines, 25,800 hp each; 2 Rolls-Royce Tyne RM-1C cruise gas turbines, 4,900 hp each; 2 LIPS CP props; 51,600 hp

Electric: 3,000 kw Range: 4,700/16 (on 1 Tyne turbine)

Man: 18 officers, 182 men

Remarks: F 807 to F 810 ordered 31-8-74; F 811 to F 816 ordered 28-11-74; F 823 – F 826 ordered 29-12-76. The original Pieter Florisz (F 812) and Witte de With (F 813) were sold to Greece in 1981. Initially, F 807 and F 808 had two 76-mm guns, replaced by a 40-mm mount in F 807 by 1982. All are scheduled to have the 40-mm AA replaced by a 30-mm Goalkeeper gatling AA gun system; F 808 received the prototype system in 9-84 (production versions will not have the raised platform below the Goalkeeper found on F 808). In peacetime, only one Lynx helicopter is carried. Normally, only two or four Harpoon SSM (II × 2) are carried, but up to 8 can be accommodated. All ships have the Sperry Mk 29 Mod. 1 inertial navigation system.

The engineering plant is distributed in four compartments, forward to aft: auxiliaries; Olympus gas turbines; Tyne gas turbines plus reduction gears; auxiliaries. The 450-volt, 3-phase, 60-Hertz electric current is supplied by four generators driven by four SEMT-Pielstick PA4, 750-kw diesels. There are two auxiliary boilers and two

evaporators.

The hull is divided by fifteen watertight bulkheads. One pair of Denny-Brown, non-retracting fin stabilizers is fitted. Particular attention has been paid to habitability.

ity.

The Mk 36 Super RBOC chaff system (2, 6-tubed Mk 136 launchers) is replacing the original Knebworth/Corvus RL. All have the SEWACO-II data system. Two of these ten units may be offered up for sale, it was announced in mid-1985.

♦ 6 (-4) Van Speijk class

| | Bldr | Laid down | L | In serv. |
|-------------------------|---------------------------------------|-----------|----------|----------|
| F 802 VAN SPEIJK* | Nederlandsche DSM | 1-10-63 | 5-3-65 | 14-2-67 |
| F 803 Van Galen* | Kon. Mih. de Schelde | 25-7-63 | 19-6-65 | 1-3-67 |
| F 804 TJERK HIDDES* | Nederlandsche DSM | 1-6-64 | 17-12-65 | 16-8-67 |
| F 805 Van Nes* | Kon. Mij. de Schelde | 25-7-63 | 26-3-66 | 9-8-67 |
| F 814 ISAAC SWEERS | Nederlandsche DSM | 6-5-65 | 10-3-67 | 15-5-68 |
| F 815 EVERTSEN | Kon, Mij. de Schelde | 6-7-65 | 18-6-66 | 21-12-67 |
| * For sale, as of 6-85. | All bear and a los of the bear of the | | | |



Tjerk Hiddes (F 804)

G. Gyssels, 4-85



Van Nes (F 805)

L. & L. Van Ginderen, 6-84



Evertsen (F 815)

L. & L. Van Ginderen, 5-85



Isaac Sweers (F 814) - note towed array housing

Maritime Photographic, 9-85

D: 2,200 tons (2,835 fl) S: 28.5 kts

Dim: 113.42 (109.75 pp) × 12.48 × 4.57 (fl)

A: 2/Harpoon SSM (I \times 2) — 2/Sea Cat systems (IV \times 2) — 1/76-mm OTO Melara DP — 6/324-mm Mk 32 ASW TT (III \times 2) — 1/Lynx ASW helicopter



Evertsen (F 815) - with SQR-18A towed linear hydrophone array aft, UA-13 EW array at masthead

Skyfotos, 2-83

Electron Equipt: Radar: 1/Decca TM 1229C, 1/DA-05/2, 1/LW-03, 2/M-44 (for Sea Cat), 1/M-45 (for 76-mm)

Sonar: 1/CWE-610, 1/PDE-700 (F 814, 815; SQR-18A also) EW: passive intercept syst., UA-13 or FH-12 intercept array, 2/Knebworth/Corvus chaff RL (VIII × 2) or Mk 36 SRBOC (VI × 2)

M: 2 sets Werkspoor-English Electric double-reduction GT; 2 props; 30,000 hp Electric: 1,900 kw Boilers: 2 Babcock & Wilcox; 38.7 kg/cm², 450°C Range: 4,500/12 Man: 180 tot.

Remarks: Originally similar in general to the British Leander class, but with broader bridge and two Sea Cat missile systems, each with a director. Major modernizations began 1977, during which the twin Mk 6, 114-mm gunmount was replaced by an OTO Melara 76-mm gun; the Limbo ASW mortar was deleted and two triple ASW TT added; the hangar was enlarged and made to telescope to accommodate the SH-14A or B ASW version of the Lynx helicopter; positions for Harpoon SSM canisters (normally only two carried) were added; new radars, sonars, and the SEWACO-II data system were added; and the crew requirement was reduced from 247 to 180 total. All but F 802 (which initially also had the Mk 32 ASW TT one deck higher), F 804 and F 814 have the British UA-13 passive intercept array at the masthead. Conversion dates: F 802: 24-12-76 to 3-1-78; F 803: 15-7-77 to 30-11-79; F 805: 31-3-78 to 1-8-80; F 804: 15-12-78 to 1-6-81; F 815: 18-7-79 to 26-11-82; and F 814: 1-7-80 to 28-10-83. New infrared signature suppression stack caps added. F 814 and F 815 received U.S. SQR-18A towed passive linear hydrophone array, and F 814 has SRBOC chaff RL. F 802 out of service mid-1985 with severe boiler and piping corrosion, while F 804 was also reported to have boiler problems. F 814 and F 815 are to be retained, due to their towed sonar installations; the others are available for sale.

Note: The remaining four "Roofdier" (U.S. PCE 821)-class corvettes have been decommissioned for eventual disposal: Jaguar (F 822) on 23-12-85, Fret (F 818) on 13-7-84, and Wolf (F 817) and Vos (F 820) on 1-1-85.

PATROL BOATS

| • 5 Balder class | Bldr: Riikswerf Willemsoord, Den Helder |
|------------------|---|
| * O Daider Class | Little Thinkswell Willellisoold, Len Heidel |

| | Laid down | L | In serv. |
|----------------------------|-----------|---------|----------|
| P 802 BALDER (ex-SC 1627) | 8-53 | 24-2-54 | 6-8-54 |
| P 803 Bulgia (ex-SC 1628) | 10-53 | 24-4-54 | 9-8-54 |
| P 804 FREYR (ex-SC 1629) | 2-54 | 17-7-54 | 1-12-54 |
| P 805 HADDA (ex-SC 1630) | 4-54 | 2-10-54 | 3-2-55 |
| P 806 Hefring (ex-SC 1631) | 8-54 | 1-12-54 | 23-3-55 |



Bulgia (P 803)

G. Gyssels, 11-84

D: 150 tons (168 fl) S: 15.5 kts Dim: 36.35 (35.0 pp) × 6.21 × 1.8 A: 4/20-mm AA (I × 4) (2 d.c. throwers — 2/d.c. racks)

Electron Equipt: Radar: 1/Kelvin Hughes 14/9

M: 2 Werkspoor RUB 1612 diesels; 2 props; 1,050 hp

Electric: 60 kw Range: 1,000/13 Man: 3 officers, 24 men

Remarks: Built with U.S. "Offshore" funds. P 803 and P 804, both active, have had their forward 40-mm U.K. "Boffin" AA mount replaced by a 20-mm AA and do not appear to carry the d.c. equipment. The three in reserve retain the 40-mm mount. All five are to be stricken by end 1987, without replacement.

MINE WARFARE SHIPS

♦ 9 (+4 + 2) Alkmaar ("Tripartite")-class minehunters Bldr: Van der Giessen de Noord, Alblasserdam

| M 050 A | Ordered | Laid down | L 18-5-82 | In serv. 28-5-83 |
|--|---------|-----------|--------------|---------------------|
| M 850 ALKMAAR | 26-7-77 | 30-1-79 | | |
| M 851 DELFZLIL | 26-7-77 | 29-5-80 | 26-2-83 | 17-8-83 |
| M 852 DORDRECHT | 23-1-79 | 5-1-81 | 26-2-83 | 16-11-83 |
| M 853 HAARLEM | 23-1-79 | 16-6-81 | 9-7-83 | 12-1-84 |
| M 854 HARLINGEN | 31-3-81 | 30-11-81 | 9-7-83 | 12-4-84 |
| M 855 Scheveningen (ex- Hellevoetsluis) | 31-3-81 | 24-5-82 | 2-12-83 | 18-7-84 |

| M 856 Maassluis | 16-12-81 | 7-11-82 | 5-5-84 | 12-12-84 |
|---|----------|----------|---------|----------|
| M 857 Makkum | 16-12-81 | 28-2-83 | 27-9-84 | 13-5-85 |
| M 858 MIDDELBURG | 21-7-82 | 11-7-83 | | 10-85 |
| M 859 HELLEVOETSLUIS (ex-Scheveningen) | 21-7-82 | 12-12-83 | * * * | 3-86 |
| M 860 SCHIEDAM | 10-12-83 | 3-5-84 | | 7-86 |
| M 861 Urk | 10-12-83 | 1-10-84 | | 12-86 |
| M 864 WILLEMSTAD | 3-7-84 | 12-85 | | 3-88 |



Scheveningen (M 855)

M. Louagie, 3-85



Delfzijl (M 851)

M. Willis, 5-85

D: 510 tons (540 fl) **S:** 15 kts (7 kts hunting) **Dim:** 51.6 (47.1 pp) × 8.96 × 2.45 (2.6 max.)

A: 1/20-mm 20F-2 AA - 2/PAP-104 remote-controlled minehunting devices

Electron Equipt: Radar: 1/Decca TM 1229C

Sonar: 1/DUBM-21B—1 EVEC 20 plot table, autopilot, Toran and Syledis radio navaids, Decca HiFix precision navigation system

M: 1 Brons-Werkspoor A-RUB 215 \times 12 diesel; 1 CP prop; 1,900 hp; 2/75-hp bow-thrusters; 2/120 hp Schöttel active rudders

Electric: 880 kw Range: 3,500/10 Man: 34 tot.

Remarks: Same design as "Tripartite" minehunters for France and Belgium. Hull made of a compound of glass and polyester resin. The 20-mm AA gun is not always aboard. These ships can also tow a mechanical drag sweep. The DUBM-21A sonar can detect mines in waters up to 80-m depth, at slant ranges up to 500 m. Have 3 × 270-kw gas turbine generator sets and one 160-kw diesel set. Active tank stabilization.

Note: Two, and possibly four, of the units still under construction may be sold to meet foreign sales commitments; they may not be replaced by additional units, due to severe financial constraints. Sisters Zierikzee (M 862, ex-Veere) and Vlaardingen (M 863) were sold 1985 to Indonesia while under construction; they will be replaced by later units in the sequence.

• 9 Dokkum class

6 Coastal Minesweepers (from among the following):

| ACAD STREET | | Swatersow | 0.0710.750 | 22 0 C 12 RESE |
|---------------------------------|----------------------------------|-----------|------------|----------------|
| M 802 HOOGEZAND (ex-MSC 173) | Gusto/F.A. Smulders, Schiedam | 18-7-53 | 22-3-55 | 7-11-55 |
| M 809 Naaldwijk (ex-MSC 175) | De Noord, Alblasserdam | 2-11-53 | 1-2-55 | 8-12-55 |
| M 810 ABCOUDE (ex-MSC 176) | Gusto/F.A. Smulders, Schiedam | 10-11-53 | 2-9-55 | 18-5-56 |
| M 812 DRACHTEN (ex-MSC 177) | Niestern SB, Hellevoetsluis | 9-12-53 | 24-3-55 | 27-1-56 |
| M 813 OMMEN (ex-MSC 178) | J. & K. Smits, Kinderdijk | 22-12-53 | 5-4-55 | 19-4-56 |
| M 815 GIETHOORN (ex-MSC 179) | L. Smit & Son, Kinderdijk | 22-12-53 | 30-3-55 | 29-3-56 |

MINE WARFARE SHIPS (continued)

| M 817 VENLO (ex-MSC 180) | Arnhemse SB, Arnhem | 10-2-54 | 21-5-55 | 26-4-56 |
|-------------------------------|--------------------------------|----------|---------|----------|
| M 823 NAARDEN (ex-MSC 183) | Wilton-Fijenoord, Schiedam | 28-10-54 | 27-1-56 | 18-5-56 |
| M 830 SITTARD (ex-MSC 186) | Niestern SB, Hellevoetsluis | 10-3-55 | 26-4-56 | 19-12-56 |
| M 841 GEMERT (ex-MSC 187) | J. & K. Smits, Kinderdijk | 5-4-55 | 13-3-56 | 7-9-56 |
| | | | | |



Ommen (M 813) - minesweeper, 1/20-mm AA only

G. Gyssels, 1-85

3 Support Ships for Mine-demolition Divers:

| (2.2) | | | | |
|--------------------------------|-------------------------------|---------|----------|----------|
| M 806 ROERMOND (ex-MSC 174) | Wilton-Fijenoord, Schiedam | 19-9-53 | 13-8-55 | 29-12-55 |
| M 820 WOERDEN | Haarlemse SB, | 10-8-54 | 28-11-56 | 24-4-57 |
| (ex-MSC 182) M 844 RHENEN | Haarlem Arnhemse SB, | 18-4-55 | 31-5-56 | 7-12-56 |
| (ex-MSC 189) | Arnhem | 10-4-00 | 31-0-00 | 1-12-00 |



Roermond (M 806) - mine clearance diver support

L. & L. Van Ginderen, 9-83

D: 373 tons (453 fl) S: 15 kts Dim: 46.62 × 8.75 × 2.28

A: 1/20-mm AA

Electron Equipt: Radar: 1/Decca TM 1229C

M: 2 Fijenoord-M.A.N. V 64 diesels; 2 props; 2,500 hp

Range: 2,500/10 Man: 38 tot.

Remarks: Wooden construction units of same basic design as British "Ton" and French Sirius classes, funded by U.S. All units of the similar Wildervank class were disposed of by 1976. Four Dokkums converted to function as minehunters (with Plessey Type 193M sonar) during 1968-73 have recently been disposed of: Dokkum (M 801), placed in unmaintained reserve 4-83, was retrieved for use in oil fuel trials in 1984; Drunen (M 818) was stricken 19-4-84; Staphorst (M 828) was stricken 20-1-84; and Veere (M 842) was stricken 19-10-84.

Of the ten surviving as minesweepers, four were to be disposed of by the end of 1985, with the remainder intended to survive until 1993; sister *Hoogeveen* (M 827) was stricken 5-11-82. Three others (M 806, 820, 844) have had their sweep gear replaced by facilities for mine-disposal divers. The original 2/40-mm "Boffin" AA mounts began to be replaced by a single 20-mm Oerlikon AA forward in all from 1982 on.

Note: The entire 16-ship Van Straelen-class was disposed of during 1982-83, with strike dates including: Van Straelen (M 872) on 10-12-82, Van Well Groeneveld (M 875) on 25-12-82, Bussemaker (M 869) on 4-2-83, Van't Hoff (M 879) on 18-2-83, Schuiling (M 876) on 21-2-83, and Houtepen (M 882) on 4-3-83. La Coumble (M 870) was transferred to the Sea Scouts on 31-7-84, and Peru purchased Van Hamel (M 871) and Van der Wel (M 878) on 23-2-84 for use as survey craft; the remainder are for sale.

AMPHIBIOUS WARFARE CRAFT

 6 (+6) LCA Mk 2 landing craft 1984-85)
 Bldr: Naval Shipyard, Den Helder (In serv.

L 9530 L 9531 L 9532 L 9533 L 9534 L 9535

D: . . . S: 11 kts Dim: 16.0 × 4.4 × 1.3

A: 1/7.62-mm mg Electron Equipt: Radar: 1/Decca 110
M: 1 DAF-Turbo diesel; 1 Schöttel swivelling prop; 260 hp

Range: 220/11 Man: 3 Crew + 25 troops

Remarks: Glass-reinforced plastic construction, intended to replace the 10 LCA Mk 1 completed 1962-64. Were to have been 12, but only six have been ordered. L 9530 completed 10-10-84; L 9531 completed 12-84, the remainder in 1985. Can carry a Land Rover truck or BV 202 tracked snow vehicle in place of the 25 troops.

HYDROGRAPHIC SHIPS

♦ 1 Tydeman class Bldr: B. V. De Merwede, Hardinxveld-Giessendam

Laid down L In serv. A 906 Tydeman 29-4-75 18-12-75 10-11-76



Tydeman (A 906) - white hull, buff stack, orange boats

L. & L. Van Ginderen, 3-85

D: 3,000 tons (fl) S: 15 kts Dim: 90.15 × 14.43 × 4.75

M: 3 Stork-Werkspoor 8-FCHD-240 diesels, electric drive; 1 prop; 2,730 hp; 2 bow-thrusters; 1 active rudder

Electric: 1,400 kw Range: 10,300/13.5; 15,700/10.3

Man: 59 men, 15 civilians

Remarks: Assigned to civilian and military research. Hangar and flight deck for one small helicopter. Eight laboratories. Any two of the three main diesels power the propulsion motors, the other then provides ship's service power.

♦ 2 Blommendal class Bldr: Boele S & M, Bolnes

| | Laid down | L | In serv. |
|------------------|-----------|----------|----------|
| A 904 Buyskes | 31-1-72 | 11-7-72 | 9-3-73 |
| A 905 Blommendal | 1-8-72 | 21-11-72 | 22-5-73 |



Blommendal (A 905)

G. Gyssels, 3-84

D: 867 tons (1,025 fl) S: 14 kts Dim: 58.80 × 11.13 × 3.70

M: 2 Paxman 742-hp 12 RPHCZ7 diesels, Smit electric drive; 1 prop; 1,100 hp Electric: 745 kw Range: 7,000/10 Man: 43 tot.

Remarks: Carry two survey launches and two chain-clearance drag boats. Automated data-logging system.

REPLENISHMENT SHIPS

Note: Construction of two replenishment oilers is planned, one to replace *Poolster* and the other to permit three task groups to operate independently.

♦ 1 improved Poolster class Bldr: Verolme, Alblasserdam

Laid down L In serv.

A 832 Zuiderkruis 16-7-43 15-10-74 27-6-75

D: 17,357 tons S: 21 kts Dim: 169.59 (157.00 pp) × 20.3 × 8.4 (max.)

A: 2/20-mm AA(I × 2), 1/d.c. rack (8 d.c.)

REPLENISHMENT SHIPS (continued)



Zuiderkruis (A 832)

L. & L. Van Ginderen, 2-84

Electron Equipt: Radar: 2/Decca 1226

EW: passive syst., 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 2 Werkspoor TM 410 16-cyl. diesels; 2 props; 21,000 hp Electric: 3,000 kw

Man: 17 officers, 26 petty officers, 130 men

Remarks: Cargo capacity: 9,000 tons fuel, 400 tons TR-5, 200 tons fresh water, spare parts, ammunition. Hangar for three Lynx helicopters. Can carry ASW torpedoes and other stores to support up to five ASW helicopters. Two fueling stations per side, amidships, and one sliding-stay, constant-tension, solid transfer station each side, forward.

1 Poolster class

Bldr: Rotterdamse Droogdok Mij., Rotterdam

Laid down 18-9-62

L

In serv. 10-9-64

A 835 POOLSTER

16-10-63



Poolster (A 835)

L. & L. Van Ginderen, 4-85

D: 16,836 tons (fl) S: 21 kts Dim: 168.41 (157.00 pp) × 20.33 × 8.24

A: 2/40-mm AA (I×2)-1/d.c. rack (8 d.c.)

Electron Equipt: Radar: 1/Decca 1229, 1/Decca 2459

Sonar: 1/CWE-610

EW: passive syst., 2/Knebworth/Corvus chaff RL (VIII × 2)

M: 2 sets GT; 1 prop; 22,500 hp Boilers: 2 Electric: 2,100 kw Man: 200 tot.

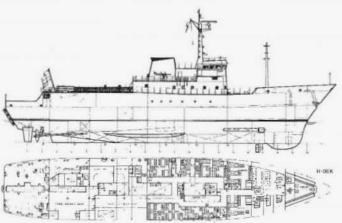
Remarks: Cargo capacity: 10,300 tons, including 8,000 tons of fuel. Hangar for three Lynx helicopters. Also a combat supply ship capable of participating effectively in antisubmarine warfare with a hunter/killer group, thanks to her ability to handle three Lynx ASW helicopters, if required. For short distances, she can carry 300 Marines as well as her own crew. Decca 2459 dual F/I-band radar replaced DA-01 radar 1983 for trials.

TENDERS

• 0 (+1) new-construction torpedo-trials ship

Bldr: De Schelde, Vlissingen

Laid down In serv. 3-85 1987 A 900 MERCHUR



Mercuur (A 900)

R. Neth. Navy, 1985

D: 1,200 tons (1,500 fl) S: 14 kts Dim: 64.85 × 12.00 × 4.30

A: 2/7.62-mm mg (I × 2) - 2/533-mm TT (underwater) - mines

Electron Equipt: Radar: . . . - Sonar: .

M: 2 Brons-M.A.N. diesel generator sets (650 kw each); electric drive; 2

props; . . . hp-bow-thruster

Man: 4 officers, 21 men + trials personnel

Remarks: Ordered 13-6-84 to replace U.S. Agile-class former minesweeper of the same name as torpedo-trials ship.

♦ 1 U.S. Agile-class mine-countermeasures support ship Bldr: Astoria Marine, Astoria, Ore.

Laid down In serv. A 855 Onbevreesd (ex-M 885, ex-MSO 481) 8-12-52 7-11-53 21-9-54



Onbevreesd (A 855)

G. Gyssels, 1981

D: 735 tons (790 fl) S: 15.5 kts Dim: 52.7 × 10.75 × 3.7

A: 1/40-mm AA - 2/d.c. racks

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9-Sonar: QCU-2 M: 2 G.M. 8-278A diesels; 2 CP props; 1,600 hp Electric: 560 kw

Fuel: 47 tons Range: 3,000/10 Man: 67 tot.

Remarks: Former ocean minesweeper. Typed "escort ship" and intended to serve as flagship for a mine-countermeasures force and to lay mines in exercises. Sister Onversaagd was stricken in 31-7-79, and Onvervaard (A 858) and Onverdroten (A 859) were stricken 15-5-82.

1 U.S. Agile-class torpedo-trials ship

Bldr: Peterson Bldrs., Sturgeon Bay,

Wisc.

A 856 Mercuur (ex-Onverschrokken, M 886, 19-2-52

Laid down

In serv. 17-1-53 22-7-54

ex-MSO 483)

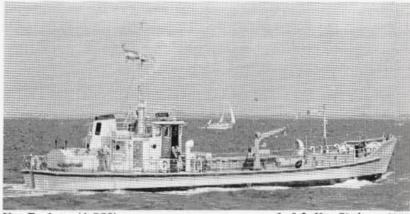
REMARKS: Former ocean minesweeper. Data as for ship above, except no gun. Converted to a torpedo-trials and servicing ship in 1972; scheduled to be replaced 1986 by a new-construction torpedo retriever.

Bldr: Zaanlandse SM, Zaandam 1 torpedo-trials ship

Laid down

In serv.

3-8-62 20-7-62 A 923 VAN BOCHOVE 6-12-61



Van Bochove (A 923)

L. & L. Van Ginderen, 1979

D: 140.8 tons (fl) S: 8 kts Dim: 29.79 × 5.53 × 1.8

A: 2/533-mm TT (submerged, at bow)

M: 1 Kromhout diesel; 1 Schöttel prop; 140 hp Man: 8 tot.

TUGS

Note: Construction of two new 1,000-hp coastal tugs is planned.

Bldr: Rijkswerf Willemsoord, Den Helder ♦ 2 Westgat-class coastal tugs

Laid down In serv. A 872 WESTGAT 3-4-67 22-8-67 10-1-68 A 873 WIELINGEN 28-8-67 6-1-68 31-5-68

D: 206 tons (fl) S: 12 kts Dim: 27.18 × 6.97 × 2.34

A: None Electron Equipt: 1/Kelvin-Hughes 14/9 M: 1 Bolnes diesel; 1 prop; 720 hp Man: 9 tot.

TUGS (continued)



Wielingen (A 873)

L. & L. Van Ginderen, 6-84

♦ 1 Wambrau-class coastal tug Bldr: Rijkswerf Willemsoord, Den Helder

Laid down L In serv. A 871 Wambrau (ex-Y 8036) 24-7-56 27-8-56 8-1-57



Wambrau (A 871)

L. & L. Van Ginderen, 10-85

D: 179.4 tons (fl) S: 10.8 kts Dim: 26.38 × 6.6 × 2.45 A: None M: 1 Werkspoor diesel; 1 prop; 500 hp Man: 10 tot. Note: The coastal tug Wamandai (A 870) was stricken at Curaçao, 1-7-85.

TRAINING SHIPS

• 1 former pilot ship

| A 903 ZEEFAKEL | Bldr J. & K. Smit, Kinderjik | Laid down 28-11-49 | L 217-50 | In serv. 16-3-51 |
|------------------|---|-----------------------|-------------|---------------------|
| | 84 fl) S: 12 kts Dim: 4 A.N. diesels; 2 props; 640 h | | | |
| REMARKS: Used fo | r seamanship training at I | Den Helder. | | |

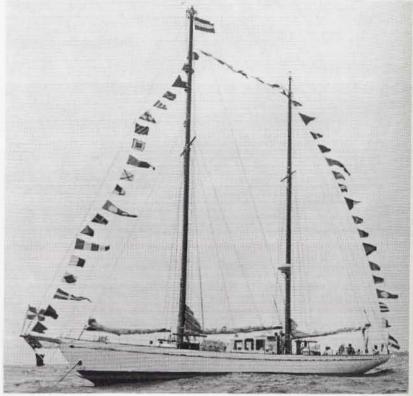
• 1 sail-training ketch

| | Bldr | L | In serv. |
|-----------------------------|----------------------------------|-----------------|----------|
| Y 8050 Urania (ex-Tromp) | Haarlemse Scheepsbouw Mij. | 1929 | 23-4-38 |
| D: 76.4 tons (fl) S: 5 kts | (10 under sail) Dim: 23.94 × 5.2 | 9×3.15 | |
| M: 1 Kromhout diesel; 1 pre | op; 65 hp (625m² sail area) Man | : 17 tot. | |



Zeefakel (A 903)

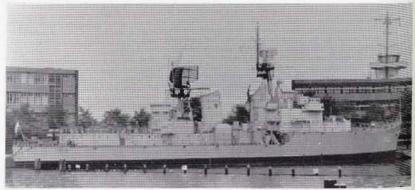
P. Voss, 6-84



Urania (Y 8050)

G. Arra, 1981

• 1 former Holland-class destroyer



Gelderland (D 811) - radar antennas remounted

H. Ehlers, 9-85

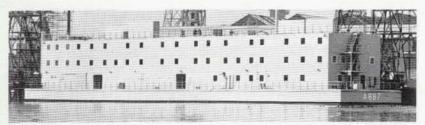
D: 2,215 tons (2,765 fl)
 S: 32 kts
 Dim: 111.3 × 11.33 × 3.88
 A: None
 M: 2 sets Parsons GT; 2 props; 45,000 hp
 Electric: 1,350 kw
 Boilers: 4 Babcock & Wilcox

Remarks: Since 1973 used for technical training at Rotterdam and for accommodations. Does not get underway. Two twin 120-mm DP guns mounted on destroyers Tromp and De Ruyter.

Note: There are also 24 small sports and training sail yachts under naval control.

ACCOMMODATIONS SHIPS

• 1 non-self-propelled Bldr: de Schelde, Vlissingen (In serv. 14-3-85) A 887 THETIS



Thetis (A 887)

L. & L. Van Ginderen, 3-85

D: 1,000 tons (fl) **Dim:** $68.47 (62.85 \text{ pp}) \times 12.82 \times 1.60$

Remarks: Launched 1-83. Replaced former gunboat Soemba (A 891) as accommodations barge at Den Oever for use by diver and frogman trainees.

• 1 non-self-propelled

Bldr: Voorwarts SY, Hoogezand

L

A 886 CORNELIUS DREBBEL

Laid down 18-5-70

30-11-71

19-11-70 D: 775 tons (fl) Dim: 63.22 × 11.82 × 1.1 Man: 201 tot.

Remarks: Stationed at Rotterdam to serve ships in overhaul.

SERVICE CRAFT

* 1 fuel lighter Bldr: H.H. Bodewes, Millingen (In serv. 1963)

Y 8536 PATRIA

D: 827 dwt S: . . . Dim: 61.6 × 8.1 × . . . M: 1 Bolnes diesel; 1 prop; . . . hp Man: . . . tot.

Remarks: Purchased 1978. Based at Den Helder. Bow number: 611.

◆ 1 fuel barge: Y 8538 (In serv. 1955)

1 small water tanker: Y 8480 (In serv. 1952)

◆ 1 torpedo lighter: Y 8512 (In serv. 1950)

♦ 2 small cargo lighters: Y 8500 (In serv. 1953) Y 8501 (In serv. 1951)

• 3 personnel launches: Y 8216, Y 8217, Y 8220 (In serv. 1951-52)

Remarks: U.S. Coast Guard 40-ft. utility boat design.

 3 steam supply craft: Y 8005 (In serv. 1937), Y 8122 (In serv. 1937), Y 8260 (In serv. 1940)

• 1 electrical power supply craft: Y 8676 (In serv. 1962)

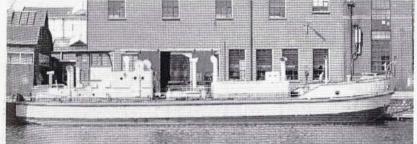
♦ 1 tank-cleaning boat: Y 8262 (In serv. 1918)

1 hull-cleaning boat: Y 8263 (In serv. 1967)



Y 8480 - water tanker

G. Koop, 9-83



Y 8676 - electrical power supply craft

L. & L. Van Ginderen, 10-82

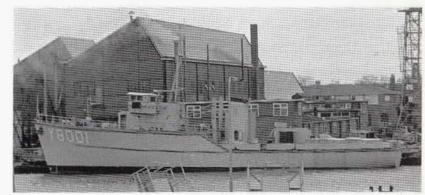


Y 8500 - cargo lighter

L. & L. Van Ginderen, 10-81

♦ 1 Dokkum-class fuel-trials craft, former minehunter

Laid down In serv. Y 8001 Dokkum (ex-M 801, Wilton Fijenoord, 15-6-53 12-10-54 26-7-55 Schiedam ex-MSC 172)



Dokkum (Y 8001)

L. & L. Van Ginderen, 8-85

REMARKS: Details generally as for minesweeper sisters; no armament. After having been placed in unmaintained reserve in 4-83, was reclaimed and adapted for testing

• 6 fast target craft (In serv. 1982-83)

Y 8694 Y 8699-8703

REMARKS: No data available.

| • 4 Berkel-class harbor tugs | | Bldr: H.H. Bodewes, Millinger | |
|------------------------------|-----------|-------------------------------|----------|
| | Laid down | L | In serv. |
| Y 8037 BERKEL | 27-4-56 | 29-9-56 | 27-12-57 |
| Y 8038 DINTEL | 22-5-56 | 17-11-56 | 23-1-57 |
| Y 8039 DOMMEL | 29-8-56 | 22-12-56 | 27-2-57 |
| Y 8040 IJSSEL | 17-9-56 | 19-1-57 | 20-3-57 |



IJssel (Y 8040)

R. Neth. N., 1979

D: 163.4 tons (fl) S: 10.6 kts Dim: 25.09 × 6.27 × 2.45 M: 1 Werkspoor diesel; 1 Kort-nozzle prop; 500 hp Man: 5 tot.

 2 Bambi-class harbor tugs Bldr: Rijkswerf Willemsoord, Den Helder

Y 8016 BAMBI (L: 12-5-53) Y 8017 Dомво (L: 25-5-57)

D: 43 tons (fl) S: . . . kts Dim: 16.58 × 4.63 × 1.9 M: 1 Bolnes diesel; 1 prop; 200 hp Man: 4 tot.

SERVICE CRAFT (continued)



Dombo (Y 8017)

G. Koop, 9-83

♦ 1 small harbor tug Bldr: Boot, Alphen aan den Rijn (In serv. 1942)

Y 8014 (ex-A 857, ex-RS 17, ex-OZD 4, ex-Jade)

D: 75 tons (fl) S: . . . kts Dim: 20.0 × 5.25 × 1.8 M: 1 diesel; 1 prop; 75 hp Man: 3 tot.

♦ 1 small harbor tug Bldr: Foxhol (In serv. 1938)

Y 8028 (ex-A 868, ex-RS 28, ex-KM 15, ex-Eems)



Y 8028

L. & L. Van Ginderen, 1980

D: 70 tons (fl) S: . . . kts Dim: 19.5 × 5.1 × 2.3 M: 1 Bolnes diesel; 1 prop; 200 hp Man: 7 tot.

• 3 Triton-class diving tenders Bldr: Rijkswerf Willemsoord, Den Helder

| | Laid down | L | In serv. |
|----------------------------|-----------|---------|----------|
| A 848 TRITON (ex-Y 8125) | 3-2-64 | 27-2-64 | 5-8-64 |
| A 849 Nautilus (ex-Y 8126) | 17-3-64 | 1-5-64 | 20-4-65 |
| A 850 Hydra (ex-Y 8127) | 21-5-64 | 1-7-64 | 20-4-65 |



Triton (A 848)

H. Ehlers, 8-85

D: 69.3 tons (fl) S: 9 kts Dim: 23.28 × 5.15 × 1.35 M: 1 Volvo Penta diesel; 1 prop; 105 hp Man: 8 tot.

♦ 1 training tender for divers Bldr: Rijkswerf Willemsoord, Den Helder

A 847 Argus (ex-Y 8124, ex-Y 8651, ex-A 950, ex-RD 10, ex-MOD IV, ex-D1)

Laid down L In serv. 18-5-39

D: 44.5 tons (fl) S: 8 kts Dim: 23.0 × 4.68 × 1.05 M: 1 Kromhout diesel; 1 prop; 144 hp Man: 8 tot.

- 1 floating crane: Y 8514 (In serv. 1974)
- 2 floating dry docks Y 8678 RW 22 (In serv. 1949) Y 8679 RW 60 (In serv. 1960)
- ◆ 1 wreck simulation craft: Y 8690 (In serv. 1969)
- 18 dry-cargo barges (In serv. 1900-1965): Y 8299, Y 8321, Y 8322, Y 8324, Y 8325, Y 8327, Y 8328, Y 8330, Y 8331, Y 8332, Y 8333, Y 8334, Y 8337, Y 8338, Y 8339, Y 8340, Y 8341, Y 8403
- 2 mooring pontoons: Y 8594, Y 8595 (In serv. 1956)
- 3 submarine mooring pontoons: Y 8597, Y 8598 (In serv. 1971), Y 8599 (In serv. 1977)
- 8 miscellaneous pontoon barges: Y 8600, Y 8601, Y 8602, Y 8603, Y 8711, Y 8713, Y 8714, Y 8716
- 8 miscellaneous floats: (In serv. 1951-53) Y 8583, Y 8584, Y 8585, Y 8586, Y 8588, Y 8589, Y 8590, Y 8592

Note: The Netherlands Pilot Service, carried in the 1980/81 edition, was transferred from nominal naval control early in 1980.

NETHERLANDS NATIONAL POLICE FORCE (MINISTRY OF JUSTICE)

Note: This organization operates about 70 patrol craft, of which only the *De Ruiter* class, listed below, is considered seagoing. A number of other jurisdictions, including the Customs Service, the Rotterdam City Police, and the Department of Communications, also operate patrol craft.

RP 20 (In serv. 7-84)

3 RP 16 class
 RP 16 (In serv. 1-84)

Bldr: Schöttel, Warmond

RP 63 (In serv. 10-84)



RP 16

L. & L. Van Ginderen, 6-84

D: 30 tons S: 19 kts Dim: 23.50 × 5.30 × 1.60 Electron Equipt: 1/Racal Decca . . . nav. M: 3 M.A.N. D282-ME diesels; 3 props; 1,266 hp Man: 6 tot.

• 6 15-meter class

Bldr: Schöttel, Warmond

RP 59 (In serv. 1982) RP 70 (In serv. 12-84) RP 63 (In serv. 1984) RP. . . RP 69 (In serv. 4-2-83) RP. . .



RP 59

L. & L. Van Ginderen, 8-84

NETHERLANDS (continued) NATIONAL POLICE FORCE (continued)

D: 17.5 tons S: 17 kts Dim: 15.36 × 3.78 × 1.25 M: RP 69: 2 DAF DKA-1160M diesels; 2 props; 440 hp; others: 1 M.A.N. D2842-ME diesel; 1 prop; 422 hp Man: 3 or 4 tot.

Bldr: Schöttel, Warmond • 3 De Ruiter class

RP 15 DE RUITER (In serv. 5-79) RP. . . N. RP. . . N.

D: 27 tons (fl) S: 18.5 kts Dim: 19.13 × 4.27 × 1.3

M: 2 12-cyl. diesels; 2 Schöttel vertical cycloidal props; 680 hp Man: 3-4 tot.

REMARKS: The second and third were ordered 6-80.

* 3 RP 17 class Bldr: Le Comte, Vianen, 1974

RP 26 **RP 17** RP. . .



RP 17

L. & L. Van Ginderen, 6-84

D: 29 tons S: 15 kts Dim: 15.75 × 3.83 × 1.05 M: 1 MTU OM403 diesel; 1 Schöttel vertical cycloidal prop; 250 hp

Bldr: Le Comte, Vianen, 1970 • 7 10.8-meter class

D: 8.5 tons S: 14.5 kts Dim: 10.8 × 3.22 × 1.2 M: 1 MTU OM346 diesel; 1 Schöttel prop; 165 hp

Bldr: Schuiten, Muiden, 1968 • RP 10



RP 10

L. & L. Van Ginderen, 6-82

D: 70 tons (fl) S: 14 kts Dim: 23.0 × . . . × . . . M: 1 Bolnes GDNL diesel; 600 hp

• RP 3 Bldr: Koopman, Dordrecht, 1967

D: 60 tons (fl) S: 12.7 kts Dim: 22.0 × 5.3 × 1.5 M: 2 G.M. 12V71 diesels; 2 props; 670 hp

NEW ZEALAND

Personnel (1983): 2,757 total (plus 444 reserves) Merchant Marine (1984): 118 ships — 284,850 grt

(tankers: 6 ships-84,635 grt)

NAVAL AVIATION: Eleven Wasp helicopters are available for the Leander-class frigates and the survey ship Monowai. Five Lockheed P3-B Orion patrol planes belong to the Royal New Zealand Air Force. These were modernized by Boeing over a 41-month period commencing 7-80; the first was completed 2-83. A second round of modernizations is planned to bring the aircraft up to P-3C standard. A sixth P-3B is to be purchased, plus 3 Fokker F 27 Maritime for search-and-rescue duties. The RNZAF's A-4 Skyhawks are to have a maritime attack role.

FRIGATES

♦ 2 U.K. "broad-beam Leander" class

| | Bldr | Laid down | L | In serv. |
|------------------|--------------------|-----------|---------|----------|
| F 69 WELLINGTON | Vickers-Armstrong, | 27-10-66 | 29-2-68 | 17-10-69 |
| (ex-Bacchante) | Newcastle | 10 4 00 | 0 5 50 | 00 10 51 |
| F 421 CANTERBURY | Yarrow, Scotstoun | 12-4-69 | 6-5-70 | 22-10-71 |



Wellington (F 69) - prior to alterations

L. & L. Van Ginderen, 10-82



Canterbury (F 421)

L. & L. Van Ginderen, 2-84

D: F 69: 2,500 tons (2,962 fl); F 421: 2,470 tons (3,638 fl)

S: 28 kts (30 on trials) Dim: 113.38 (109.73 pp) × 13/12 × 5.49

A: 2/114-mm Mk 6 DP (II × 1) — 1/Sea Cat GWS 22 syst. (IV × 1) — 2/12.7-mm mg (I × 2) - 1/Limbo ASW mortar (III × 1, not in F 421) - 6/324-mm ASW TT (III × 2, not in F 69) - 1/Wasp HAS.1 helicopter

Electron Equipt: Radar: 1/1006, 1/965, 1/993, 1/903, (F 69: RCA R76C5) for 114-mm guns, 1/904 for Sea Cat

Sonar: 1/184M, 1/162M

EW: UA-8/9 passive intercept, Type 668/669 jammer M: 2 sets White-English Electric GT; 2/5-bladed props; 30,000 hp

Boilers: 2 Babcock & Wilcox 3-drum; 38.7 kg/cm², 450°C Superheat Electric: 2,500 kw Fuel: 500 tons Range: Approx. 4,500/12

Man: 15 officers, 230 men

Remarks: F 69 was purchased and commissioned in the New Zealand Navy on 4-10-82, proceeding to Auckland for a refit scheduled to end in 1-85, but completion delayed. The ship's 20-mm AA and chaff RL were removed prior to transfer. The Type 199 VDS was removed and stored as a spare for Southland. The MRS.3 gunfire-control system was being replaced by the RCA R76C5 system in F 69. F 69 is also receiving a Marconi NTC-1 communications suite, and may get Mk 32 ASW TT removed from Taranaki (F 148). F 69 was transferred with a Wasp helicopter aboard. The Type 184M search sonar may be replaced with a Graseby Type 750 set.

1 U.K. Leander class

Bldr

Laid down 10-1-65

18-2-65

In serv. 16-9-66

F 55 WAIKATO

Harland & Wolff

FRIGATES (continued)



Waikato (F 55)

R. Gillett, 10-34

D: 2,489 tons (2,906 fl) S: 28 kts

Dim: 113.38 (109.73 pp) × 12.50 × 5.49

A: 2/114-mm Mk 6 DP (II × 1) - 1/Sea Cat MRS.22 syst. (IV × 1) - 6/324-mm

ASW TT (III × 2) -1/HAS.1 Wasp helicopter

Electron Equipt: Radar: 1/978, 1/965, 1/993, 1/903, 1/904

Sonar: 1/184, 1/162B

EW: UA-8/9 intercept, FH-12 HFD/F

M: 2 sets White-English Electric GT; 2 5-bladed props; 30,000 hp

Electric: 1.900 kw

Boilers: 2 Babcock & Wilcox; 38.7 kg/cm2, 450°C Range: 4,100/12

Fuel: 460 tons Man: 16 officers, 227 men

REMARKS: Originally had a Mk 10 Limbo triple ASW mortar and no ASW TT; she was refitted in 1977, when the Type 170B sonar was also removed. Became training frigate when Otago was stricken.

♦ 1 ex-U.K. "Ikara Leander" class

Bldr Laid down In serv. Yarrow, Scotstoun 2-12-59 22-12-61 18-9-63 F 104 SOUTHLAND (ex-Dido, ex-Hastings)



Southland (F 104) — departing for refit

R. N. Z. N., 1984

D: 2,450 tons (2,860 fl) S: 28 kts Dim: 113.38 (109.73 pp) × 12.50 × 5.49 2/40-mm AA (I \times 2) — 2/Sea Cat GWS.22 syst. (IV \times 2) — 1/Ikara ASW syst. 6/324-mm ASW TT (III × 2) - 1/HAS.1 Wasp helicopter

Electron Equipt: Radar: 1/1006, 1/994, 1/904, 1/Ikara control Sonar: 1/184, 1/170B, 1/199VDS

EW: Argo passive intercept; Type 668/669 jammer M: 2 sets White-English Electric GT; 2/5-bladed props; 30,000 hp Boilers: 2 Babcock & Wilcox 3-drum; 38.7 kg/cm², 450°C Superheat Electric: 1,600 kw Fuel: 460 tons Range: Approx. 4,100/12

Man: 19 officers, 238 men

Remarks: Purchased and transferred to New Zealand in 18-7-83, with Wasp helicopter aboard. Commissioned 21-12-83 after refit in U.K., with Limbo ASW mortar deleted and ASW TT added, Argo EW gear installed and Type 993 radar updated to Type 994. The two Sea Cat short-range SAM launchers share a single radar director. Wellequipped for ASW, but little capability for AAW or surface warfare.

Note: The Rothesay-class frigate Otago (F 111) was stricken 7-11-83.

PATROL BOATS AND CRAFT

 4 Pukaki-class patrol boats Bldr: Brooke Marine, Lowestoft, U.K.

| | L | In serv. |
|----------------|---------|----------|
| P 3568 Pukaki | 1-3-74 | 24-2-75 |
| Р 3569 Котогті | 8-3-74 | 24-2-75 |
| P 3570 TAUPO | 25-7-74 | 29-7-75 |
| P 3571 HAWEA | 9-9-74 | 29-7-75 |



Rotoiti (P 3569) - with armament removed

L. & L. Van Ginderen, 9-83

D: 107 tons (140 fl) **S**: 22 kts **Dim**: $32.6 \times 6.1 \times 1.7$

A: 1/81-mm mortar combined with 12.7-mm mg -2/12.7-mm mg (II × 1) -2/7.62-mm mg (I × 2)

Electron Equipt: Radar: 1/Decca 916

M: 2 Ruston-Paxman 12 YCJM diesels; 2 props; 3,000 hp Range: 2,500/12

Man: 3 officers, 18 men

◆ 4 Moa-class training/patrol craft Bldr: Whangarei Engineering Co., Auck-

| | L | In serv. | | L | In serv. |
|-------------|---------|----------|-----------------|----------|----------|
| P 3553 Moa | 16-7-83 | 19-2-84 | P 3555 Wakakura | 29-10-84 | 26-3-85 |
| P 3554 Kiwi | 7-5-84 | 2-9-84 | P 3556 Hinau | -85 | -86 |



Kiwi (P 3554)

L. & L. Van Ginderen, 10-84

D: 90 tons light (110.7 fl) **S**: 12 kts **Dim**: $26.82 (24.38 \text{ wl}) \times 6.10 \times 2.18$ A: 1/12.7-mm mg Electron Equipt: Radar: 1/. . . nav. M: 2 Cummins KT-1150M diesels; 2 props; 730 hp Fuel: 11 tons

Range: 1,000/12 Man: 2 officers, 10 men (18 accom.)

Remarks: Ordered 11-2-82 to replace the remaining HDML-type patrol craft. Design derived from Australian 88-ft torpedo retriever; survey craft Takapu and Tarapunga and diving tender Manawanui are to same basic design. The mg is not normally mounted. Based as follows for naval reserve training: Moa at Dunedin, Kiwi at Lyttleton, Wakakura at Wellington, and Hinau at Auckland.

Note: HDML-type training craft Paea (P 3552), Kuparu (P 3563), Koura (P 3564) and Manga (P 3567) were stricken 1984, with P 3552 the last to go, in 12-84.

Note: Government permission was given 5-85 for the lease or purchase of a naval supply ship. No further details available.

HYDROGRAPHIC SURVEY SHIPS

• 1 converted passenger-cargo ship

Bldr: Grangemouth DY (L: 4-60)

A 06 Monowai (ex-Moana Roa)



Monowai (A 06) - white hull, buff stack

L. & L. Van Ginderen, 2-84

D: 4,027 tons (fl) S: 13.5 kts Dim: 90.33 (82.30 pp) × 14.02 × 5.21

A: 2/20-mm AA (I × 2)

M: 2 Clark-Sulzer 7-cyl. diesels; 2 CP props; 3,640 hp (3,080 sust.—bow-thruster Fuel: 300 tons Range: 12,000/13 Man: 11 officers, 115 men

Remarks: Taken over from the government-run commercial service in 1974 and converted at Scott-Lithgow, Greenock, Scotland, 9-77 to 4-10-77. Telescoping hangar fitted for one Wasp helicopter. Two 10.36-meter and one 8.84-meter survey craft carried, as well as one Rotork "Sea Truck" workboat. Decca HiFix positioning system and Omega radio navigational aids installed, as well as a navigational satellite receiver. One 4-ton crane. Side-scanning mapping sonar and other sophisticated survey equipment carried. Guns added 1980. Predecessor Lachlan, a former U.K. "River"-class frigate, is used as a barracks hulk.

♦ 2 inshore survey craft Bldr: Whangarei Eng. Ltd., Auckland

L In serv. L In serv. A 07 Takapu 5-6-80 8-7-80 A 08 Tarapunga 5-11-79 9-4-80



Takapu (A 07) - white-painted

L. & L. Van Ginderen, 10-84

D: 90 tons (112.6 fl) S: 12 kts Dim: $26.82 (24.38 \text{ wl}) \times 6.10 \times 2.18$ M: 2 Cummins KT-1150M diesels; 2 props; 730 hp Fuel: 11 tons Range: 1,000/12 Man: 2 officer, 10 men

Remarks: Ordered 30-11-77. Similar to diving tender *Manawanui*- and *Moa*-class patrol boats. Have Magnavox MX 1102 NAVSAT receiver, E.G. and G. Mk 1B sidescan sonar, Decca Trisponder position fixing, and Atlas Deso 10 echo-sounder.

OCEANOGRAPHIC RESEARCH SHIP

• 1 ex-U.S. Robert D. Conrad class Bldr: Christy Corp., Sturgeon Bay, Wis.

Laid down L In serv. A 02 Tui (ex-Charles H. Davis, T-AGOR 5) 15-6-61 30-6-62 25-1-63

D: 1,219 tons (1,402 fl) S: 12 kts Dim: 70.0 (63.7 pp) × 11.4 × 4.7 (6.3 max.) Electron Equipt: Radar: 1/RCA CRM-N1A-75

M: 2 Caterpillar D-378 diesels, electric; 1 prop; 1,000 hp — 175-hp bow-thruster Electric: 850 kw Fuel: 211 tons Range: 12,000/12

Man: 8 officers, 16 men, 15 scientists

Remarks: Transferred on loan 28-7-70 and commissioned 11-9-70. Was used in acoustics research for the New Zealand Defense Research Establishment, which modified the ship so that it could be used to lay and tow hydrophone arrays. Has a 620-kw gas-turbine generator to drive the prop for quiet running.



Tui (A 02) - white hull, buff stack

RNZN, 1984

SERVICE CRAFT

♦ 1 harbor tug Bldr: . . . (L: 1969)

A 10 Arataki (ex-Aorangi)



Arataki (with original name still visible at bow)

RNZN, 11-84

D: 170 tons (fl) **S:** 12 kts **Dim:** 25.30 × 7.62 × 3.0 **M:** 1 Ruston 6ARM diesel; 1 prop; 1,100 hp

Remarks: Purchased 26-10-84 from Timaru Harbour Board to replace earlier tug Arataki. Has 16-ton bollard pull.

♦ 1 diving tender

Bldr L In serv.

Manawanui Whangarei Eng. Ltd. 8-12-78 28-5-79

D: 90 tons (110 fl)
S: 12 kts
Dim: 26.82 (24.38 wl) × 6.10 × 2.20
M: 2 Cummins KT 1150M diesels; 2 props; 730 hp
Range: 1,000/12
Man: 16 tot.

Remarks: Other than the addition of a davit at the stern and a free-standing tripod mast, resembles the *Takapu*-class inshore survey craft.

♦ 1 workboat Bldr: Miller & Tunnage, Port Chalmers (In serv. 1976)

MEOLA

D: 6 tons S: 9 kts Dim: 13.1 × . . . × . . . M: 1 4-cyl. Gardner diesel; . . . hp

Remarks: Transferred from Ministry of Public Works 1976. Used as diving tender and general tender to naval headquarters.

◆ 1 air-support training craft Bldr: Naval DY, HMNZS Philomel (In serv. 4-84)

MATUA

D: 8 tons S: 14 kts Dim: 12.0 × . . . × . . .

M: 2 Perkins diesels; 2 props; . . . hp Range: 200/14 Man: 2-4 tot.

Remarks: Used for parachute recovery, helo winch training, diver support, patrol, and rescue duties at Naval Air Support Unit, Hobsonville. Plywood hull. The same organization also operates two 12.2-m, 16-kt. crash boats and two 10-m, 8-kt. personnel launches.

NICARAGUA

Personnel (1985): Approximately 500 total MERCHANT MARINE (1984): 21 ships - 19,291 grt (tankers: 3 ships-4,398 grt)

NATIONAL GUARD (MARINE WING)

PATROL CRAFT

2 North Korean Sin Hung class

D: 25 tons S: . . . Dim: 18.3 × 3.4 × 1.7

A: 2/14.5-mm mg (II ×1)

M: 2 M50-series diesels, 2 props; 2,400 hp

Remarks: Torpedo boats, with tubes deleted, delivered 10-83.

• 1 French 28.2-meter class

Bldr: C.N. de l'Estérel (In serv: 2-9-83)

GC 8 or 9 N.

D: 57 tons (fl) **S:** 24 kts **Dim:** $28.2 \times 5.2 \times 1.6$ **A:** 2/20-mm AA (I \times 2) **Range:** 800/15 **Man:** 12 tot.

M: 2 SACM AGO diesels; 2 props; 1,500 hp

Remarks: Two ordered 12-81 for Customs duties. Launched 6-9-83 and 26-5-83; delivered 24-6-83. Wooden construction. Sister El Tayacan lost 25-2-84 to a mine at El Bluff. Two additional may have been delivered 5 to 6-84.

2 Soviet Zhuk class

GC. . . N. GC. . . N. . .

D: 60 tons (fl) S: 34 kts Dim: $24.0 \times 5.0 \times 1.8$ (props) A: 4/14.5-mm mg (II \times 2) Electron Equipt: Radar: 1/Spin Trough

M: 2 M50 diesels; 2 props; 2,400 hp

Remarks: First unit transferred 4-82 from Algeria; second unit delivered 1984, via Cuba.

 3 Israeli Dabur class Bldr: Israeli Aircraft Industries (In serv. 5-78)

GC 12 GC 13 GC 10 GC 11

D: 25 tons (35 fl) S: 19.6 kts Dim: 19.79 × 5.40 × 1.75

A: 2/20-mm AA (I × 2) M: 2 G.M. 12V72 diesels; 2 props; 960 hp

Electric: 20 kw Range: 700/16 Man: 6 tot.

Remarks: One lost 4-85 to gunfire from Honduran units. Two larger Dvora-class patrol craft were also ordered from Israel, but their delivery was embargoed in 1979 at the request of the U.S. government.

• 1 U.S. 65-foot cruiser class

Bldr: Sewart Seacraft, La. (In serv. 1962)

GC 7 RIO KURINGWAS

D: 60 tons S: 26.5 kts Dim: 25.9 × 5.6 × 1.8

A: 2/20-mm AA (I × 2) M: 3 G.M. diesels; 3 props; 2,000 hp

Range: 1,000/20 Man: 10 tot.

6 U.S. Hatteras-class cabin cruisers (In serv. 1980)

Dim: 11.6 oa

MINE WARFARE CRAFT

♦ 2 Soviet Yevgenya-class inshore minesweepers Bldr: Srednyy Neva SY.

D: 80 tons (90 fl) S: 11 kts Dim: 26.2 × 6.1

A: 1/14.5-mm mg or 25-mm AA (II × 1)

Electron Equipt: Radar: 1/Spin Trough

M: 2 diesels; 2 props; 600 hp Range: 300/10 Man: 10 tot.

Remarks: Delivered via Cuba in 10-84. Glass-reinforced plastic construction. Can hunt for mines via television system to 30-m depths.

 4 Polish K-8-class minesweeping boats serv. 1954-59)

Bldr: Polnocny SY, Gdansk (In

D: 19.4 tons (26 fl) **S:** 12 kts **Dim:** $16.9 \times 3.2 \times 0.8$

A: 1/14.5-mm mg (II × 1) Range: 300/9

M: 2 3D6 diesels; 2 props; 300 hp Man: 6 tot.

Remarks: Transferred 11-84. Wooden construction. Tow, but do not carry, wire sweeps.

NIGERIA

Personnel (1985): 550 officers, 4,500 men

Merchant Marine (1984): 178 ships-442,030 grt

(tankers: 14 ships-156,558 grt)

NAVAL AVIATION: Three Lynx Mk 89 ASW helicopters with Gem 3, 1,128-hp turbines for use aboard N.N.S. Aradu. Two Fokker F 27 Maritime patrol aircraft were delivered 1983-84 for coastal surveillance.

FRIGATES

1 MEKO 360-H class

Bldr: Blohm + Voss, Hamburg

Laid down

In serv.

F 89 ARADU (ex-Republic)

2-5-79

25-1-80 22-2-82

Aradu (F 89)

Ceclant/Premar II, 11-82



Aradu (F 89)

Ceclant/Premar II, 11-82

D: 3,680 tons (fl) S: 30.5 kts

Dim: 125.9 (119.0 pp) × 15.0 (14.0 wl) × 4.32 (5.8 props)

A: 8/Otomat MK 1 SSM (I × 8) -1/127-mm OTO Melara DP-1/Albatros SAM syst., Mk 2, Mod. 9 (VIII × 1, 24 Aspide missiles) — 8/40-mm Breda AA (II × 4) -6/324-mm ASW TT (III × 2, 18 torpedoes) -1/Lynx Mk 86 ASW helicopter

Electron Equipt: Radar: 1/Decca 1226, 1/Plessey AWS-5D, 1/H.S.A. WM-25, 1/H.S.A. STIR

Sonar: 1/H.S.A. PHS-32

EW: Decca RDL-2 intercept, RCM-2 jammer - 2/SCLAR

105-mm chaff RL (XX × 2)

M: CODOG: 2 Rolls Royce Olympus TM-3B gas turbines, 50,000 hp; 2 MTU 20V956 TB92 diesels, 11,070 hp; 2/5-bladed CP props

Electric: 4,120 kVA Fuel: 440 tons Range: 4,500/18

Man: 26 officers, 169 men, 35 cadets

Remarks: Ordered 3-11-77. Renamed 1-11-80. Arrived at Lagos 21-12-81. Similar ships (but with COGOG propulsion, two helicopters, and different electronics) built for Argentina. Makes use of modular containers for electronics and weapon systems. Carries 460 rounds of 127-mm ammunition, 10,752 rounds of 40-mm ammunition, and 120 chaff rounds for the Elsag/Breda chaff rocket launchers, H.S.A. Vesta ASW torpedo f.c.s. Name means "Thunder."

1 training frigate

In serv. Bldr Laid down 9-66 Wilton-Fijenoord, F 87 OBUMA (ex-Nigeria) 4-64 9-65 Netherlands

D: 1,724 tons (2,000 fl) S: 25 kts Dim: 109.85 (104.0 pp) × 11.3 × 3.35 A: 1/76-mm OTO Melara DP-4/40-mm AA (I×4)

FRIGATES (continued)



Obuma (F 87)

H. Ehlers, 6-83

Electron Equipt: Radar: 1/Plessey AWS-4, 1/navigational Sonar: 1/162B, 1/177

M: 4 M.A.N. VV24/30B diesels; 2 props; 16,000 hp

Range: 3,500/15 Man: 216 tot.

Remarks: Renamed 1981. Helicopter platform. Refit by Cammell Laird, 1970-71, and again at Schiedam, the Netherlands, in 1977. Only a simple lead-computing director is fitted for the 102-mm gunmount. Acts as training ship. Modernization, delayed since 1983, is to include replacing the 102-mm mount with an OTO Melara 76-mm Compact, an optronic f.c.s., and chaff RL. Former Squid ASW mortar deleted.

CORVETTES

| • 2 Erin'mi c | lass (Mk 9) | Bldr: V | osper Thornycroft, Portsmout |
|---------------|-------------|---------|------------------------------|
| | Laid down | L | In serv. |
| F 83 ERIN'MI | 14-10-75 | 20-1-77 | 29-1-80 |
| DOLD | ** ** **** | 0.0.70 | 0 - 00 |



Enymiri (F 84)

L. & L. Van Ginderen, 6-82

D: 850 tons (fl) S: 27 kts Dim: 69.0 (64.0 pp) \times 9.6 \times 3.0 (3.6 max.) A: 1/76-mm OTO Melara DP-1/Sea Cat system (III \times 1; 15 missiles) -1/40-mm Bofors AA -2/20-mm AA (I \times 2) -1/375-mm Bofors ASW RL (II \times 1) Electron Equipt: Radar: 1/Decca TM 1226, 1/AWS-2, 1/H.S.A. WM-24

Sonar:1/Plessey PMS26—Decca intercept EW: Decca "Cutlass" intercept

M: 4 MTU 20V956 TB92 diesels; 2 CP props; 20,512 hp

Electric: 889 kw Endurance: 10 days Range: 2,200/14 Man: 90 tot.

Remarks: Can sustain 20 kts on two diesels. Uses three MTU 6V51 diesel generator sets of 260 kw each and one 109-kw emergency generator. Carry 750 rounds 76-mm ammunition, 24 rds. ASW rockets. Have 2/50-mm flare launchers. Funnel heightened on F 83 after initial trials. Both names are local words for "hippopotamus."

◆ 2 Dorina class (Mk 3) Bldr: Vosper Thornycroft, Portsmouth

| | Laid down | L | In serv. |
|-------------|-----------|---------|----------|
| F 81 DORINA | 26-1-70 | 16-9-70 | 6-72 |
| F 82 Отово | 28-9-70 | 25-5-71 | 11-72 |

D: 650 tons (fl) S: 22 kts Dim: 61.57 (55.4 pp) × 7.45 × 3.35

A: 2/102-mm Mk 19 DP (II \times 1) -2/40-mm Bofors AA (I \times 2) -2/20-mm AA (I \times 2)

Electron Equipt: Radar: 1/Decca TM 626, 1/Plessey AWS-1, 1/H.S.A. M 22 Sonar: Plessey MS 22

M: 2 M.A.N. V8V 24/30-B diesels; 2 props; 4,430 hp (3,400 sust.)

Electric: 600 kw Fuel: 68 tons Range: 3,500/14

Man: 7 officers, 13 petty officers, 46 men



Dorina (F 81) — tug alongside to starboard

H. Ehlers, 12-83

Remarks: Can carry a flag officer and his staff. Living spaces air-conditioned. Fin stabilizers. The 102-mm guns are hand-loaded. Twelve watertight compartments. Refitted 1975-76. Have sonar, but no ASW ordnance fitted.

GUIDED-MISSILE PATROL BOATS

♦ 3 Combattante-IIIB class Bldr: CMN, Cherbourg, France

| | Laid down | L | In serv. |
|------------|-----------|----------|----------|
| P 181 SIRI | 15-5-79 | 3-6-80 | 19-2-81 |
| P 182 AYAM | 7-9-79 | 10-11-80 | 11-6-81 |
| P 183 EKUN | 14-11-79 | 11-2-81 | 18-9-81 |



Siri (P 181)

CMN, 1981



Ekun (P 183) - Siri (P 181) beyond

H. Ehlers, 12-85

D: 376 tons light (430 fl) S: 37 kts

Dim: 56.0 (53.0 pp) × 8.16 (7.61 wl) × 2.15

A: 4/MM 38 Exocet SSM (II × 2) — 1/76-mm OTO Melara DP — 2/40-mm Breda AA (II × 1) — 4/30-mm Emerlec AA (II × 2)

Electron Equipt: Radar: 1/Decca 1226, 1/Thomson-CSF Tritons, 1/Thomson-CSF Castor II

EW: Decca RDL intercept

M: 4 MTU 16V956 TB92 diesels; 4 props; 20,840 hp (17,320 sust.)

Range: 2,000/15 Man: 42 tot.

Remarks: Ordered 11-77. Remained at Cherbourg until 9-5-82 because of payment dispute. Official commissioning date was 6-2-82 for all. Thomson-CSF Vega gun and missile f.c.s., with 2 CSEE Panda optical directors also.

♦ 3 FPB 57 class Bldr: Lürssen, Vegesack, West Germany

| | Laid down | L | In serv |
|--------------|-----------|----------|---------|
| P 178 EKPE | 17-2-79 | 17-12-79 | 8-80 |
| P 179 Damisa | 17-2-79 | 27-3-79 | 4-81 |
| P 180 Agu | 17-2-79 | 7-11-80 | 4-81 |

D: 373 tons (436 fl) S: 35 kts Dim: 58.1 (54.4 wl) × 7.62 × 2.83 (props)

A: 4/Otomat Mk I (I \times 4) — 1/76-mm OTO Melara DP — 2/40-mm Breda-Bofors (II \times 1) — 4/30-mm Emerlec AA (II \times 2)

Electron Equipt: Radar: 1/Decca, TM 1226C, 1/H.S.A. WM-28 EW: Decca RDL intercept

GUIDED - MISSILE PATROL BOATS (continued)



Agu (P 180)

P. Voss, 8-81



Ekpe (P 178)

P. Voss, 8-81

M: 4 MTU 16V956 TB92 diesels; 4 props; 20,840 hp (17,320 sust.) Electric: 405kVA Range: 1,600/32; 3,000/16 Man: 40 tot.

Remarks: Ordered late 1977. Sailed for Nigeria 21-8-81. Navigation systems include Decca Mk 21 "Navigator" NAVSAT receiver, Omega receiver, and Marconi "Lodestone" D/F. Made 42 kts on trials. Refitted by builders, 1983-84; P 180 badly damaged during 1984, losing 76-mm mount.

PATROL BOATS

♦ 6 65-ft Commercial Cruiser design Bldr: Swiftships, Inc., Morgan City, La.

D: 36 tons (fl) S: Dim: 19.96 × 5.59 × 1.52

A: oo tons (ii)

A: . . . Electron Equipt: Radar: 1/. . . nav.

M: 2 MTU 8V396 TB93 diesels; 2 props; 1,930 hp

Range: 500/18 Electric: . . . Man: . . .

Remarks: Aluminum construction. Ordered 1985.

Note: Authority for the acquisition of up to 26 additional patrol boats to combat smuggling was given 19-4-85.

◆ 4 Makurdi class Bldr: Brooke Marine Ltd., Lowestoft, U.K.

| | L | In serv. | | L | In serv. |
|---------------|---------|----------|-------------|---------|----------|
| P 167 MAKURDI | 21-3-74 | 14-8-74 | Р 171 ЈЕВВА | 1-12-76 | 29-4-77 |
| P 168 HADEJIA | 25-5-74 | 14-8-74 | P 172 OGUTA | 17-1-77 | 29-4-77 |



Hadejia (P 168)—as rearmed

Brooke Marine, 1982

D: 115 tons (143 fl) S: 20.5 kts Dim: $32.6 \times 6.1 \times 3.5$ A: 4/30-mm Emerlec AA (II \times 2) Electron Equipt: Radar: 1/Decca 1226 M: 2 Ruston-Paxman YJCM diesels; 2 props; 3,000 hp Fuel: 18 tons Range: 2,300/12 Man: 4 officers, 20 men

Remarks: First two refitted by builders, 1981-82, others refitted in Nigeria; rearmed, engines overhauled. Originally had 2/40-mm AA (I × 2).

♦ 4 Argundu class Bldr: Abeking & Rasmussen, West Germany

L In serv. L In serv.
P 165 Argundu 4-7-73 10-74 P 169 Bras 12-1-76 3-76
P 166 Yola 12-6-73 10-74 P 170 Epe 9-2-76 3-76



Yola (P 166) and Bras (P 169) - as rearmed

P. Voss, 3-82

D: 90 tons S: 20 kts Dim: 32.0 (29.0 pp) × 6.0 × 1.7

A: 4/30-mm Emerlec AA (II × 2) Electron Equipt: Radar: 1/Decca 1229

M: 2 MTU diesels; 2 props; 2,070 hp Range: . . . Man: 25 tot.

Remarks: Refitted 1981-82 by builders; originally had 1/40-mm AA, 1/20-mm AA.

MINE COUNTERMEASURES SHIPS

♦ 0 (+2+2) Italian Lerici class Bldr: Intermarine, Sarzana

M. . Ohue 6-84 10-85 12-87 M. . Maraba

D: 470 tons (550 fl) S: 15 kts Dim: 49.98 (45.50 pp) × 9.56 × 2.63

A: 2/30-mm Emerlec AA (II × 1) -2/20-mm AA (I × 2)

Electron Equipt: Radar: 1/3 ST7/DG — Sonar: Thomson-CSF TSM 1022 (IBIS V)

M: 2 MTU 8V396 TC82 diesels; 2 waterjets; 1,740 hp

Electric: 887 kVA Range: 1,500/12 Man: 3 officers, 17 men

Remarks: First ship ordered 9-4-83, second in 5-84, with option for two more. Glassreinforced plastic construction throughout. Minehunting speed is 7 kts, using the two drop-down, rotating, shrouded thrusters. Range at 12 kts can be extended to 4,000 n.m. by using the passive roll stabilization tanks as fuel tanks. Can support 6-7 mine disposal divers. Will carry two Gaymarine Pluto remote-controlled minehunting submersibles.

AMPHIBIOUS WARFARE SHIPS

◆ 2 West German Type-502 landing ships Bldr: Howaldtswerke, Hamburg

| | Laid down | L | In serv. |
|--------------|-----------|---------|----------|
| L 1312 Ambe | 3-3-78 | 7-7-78 | 11-5-79 |
| L 1313 OFIOM | 15-9-78 | 7-12-78 | 7-79 |



Ambe (LST 1312) and Ofiom (L 1313)

H. Ehlers, 1-85

D: 1,190 tons light (1,470 normal, 1,750 fl) S: 17 kts

Dim: 86.9 $(74.5 \text{ pp}) \times 14.0 \times 2.30$

A: 1/40-mm AA — 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca 1226 M: 2 MTU 16V956 TB92 diesels; 4 props; 7,000 hp Electric: 900 kw

Range: 5,000/12 Man: 6 officers, 53 men, plus 540 troops (1,000 for short distances)

Remarks: Cargo: 400 tons vehicles plus troops (typically: 5/40-ton tanks or 7/18-ton tanks plus 4/45-ton trucks). Articulated bow ramp, short stern ramp for loading from a pier. Can fit an 81-mm mortar forward. Each engine drives two props.

◆ 2 Oton-class landing craft Bldr: Scheepswerf Gravel/Akerboom, Leiden, the Netherlands

| | Laid down | L | in serv. |
|--------|-----------|----------|----------|
| OTON | 9-81 | 22-11-81 | 1982 |
| , Ідан | 1-82 | 8-3-82 | 1982 |

AMPHIBIOUS WARFARE SHIPS (continued)

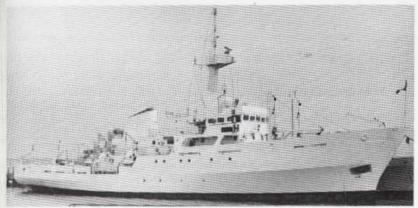
D: Approx. 320 tons (fl) S: 10.5 kts Dim: 35.0 (33.3 pp) \times 8.0 \times 1.50 M: 2 Kelvin TBS-08 diesels; 2 props; 1,000 hp

REMARKS: 130 grt. Ordered 20-1-81. May in fact be commercial vice naval landing craft.

HYDROGRAPHIC SHIPS

• 1 British Bulldog class Bldr: Brooke Marine Ltd., Lowestoft, U.K.

Laid down L In serv. A 498 Lana 5-4-74 4-3-76 9-76



Lana (A 498)

H. Ehlers, 8-83

D: 800 tons (1,100 ft) S: 15 kts Dim: 60.95 (57.8 pp) × 11.43 × 3.7 A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca 1226 M: 4 Lister-Blackstone ERS-8M diesels; 2 CP props; 2,000 hp Electric: 880 kw Range: 4,000/12 Man: 38 tot.

• 1 coastal survey craft

Bldr L In serv.

MURTULA MUHAMED Akerboom, Leiden, Netherlands 14-8-76 28-9-76

D: 13 tons S: 9 kts Dim: 11.75 × 3.5 × 1.0

M: 1 Perkins 6-354M diesel; 1 prop; 75 hp

TRAINING SHIP

♦ 1 training ship Bldr: Van Lent, Kaag, Netherlands (In serv. 10-5-75)
A 497 Ruwan Yaro (ex-Ogina Bereton)



Ruwan Yaro (A 497)

H. Ehlers, 12-83

D: 400 tons (fl) S: 17 kts Dim: 50.0 (44.2 pp) × 8.0 × 2.0 A: None Electron Equipt: Radar: 1/Decca TM 626 M: 2 Deutz SBA 12M528 diesels; 1 CP prop; 3,000 hp Fuel: 64 tons Range: 3,000/15 Man: 31 + 11 in officers' training

Remarks: Purchased 1976. Originally a yacht, has a glass-reinforced plastic hull and a bow-thruster.

TUGS

♦ 1 coastal tug Bldr: Oelkers, Hamburg (In serv. 19-5-73) A 496 RIBADU

D: 147 tons S: 12 kts Dim: 28.5 × 7.2 × 3.7 M: 1 diesel; 1 prop; 800 hp

• 2 large harbor tugs Bldr: SY de Wiel BV, Asperen, the Netherlands

A 499 Commander Apai Joe (In serv. 9-83) A 500 Commander Rudolf (In serv. 9-84)



Commander Apai Joe (A 499)

L. & L. Van Ginderen, 7-83

D: . . . S: . . . Dim: . . . × . . . × M: 2 M.A.N. diesels; 2 props; 1,510 hp

SERVICE CRAFT

◆ 3 Dutch Sea Truck tenders Bldr: Damen, Gorinchem (In serv. 10-85)

Bldr: Damen, Gorinchem (In serv. 10-85) P 239 P 240 P 242

 $\mathbf{D:}$. . . tons $\ \mathbf{S:}\ 20\ \mathrm{kts}\ \mathbf{Dim:}\ 14.50\times4.40\times0.85$ $\mathbf{M:}\ 2\ \mathrm{MTU}$ diesels; 2 props, 1,200 hp $\ \mathbf{Man:}\ 8$ tot.

Remarks: Aluminum construction, bow ramp. Can carry 1/7.632-mm mg. P. 242 used for inshore survey.

♦ 1 water lighter WATER BARGE ONE

Note: There are also 44 service launches built by Fairey Marine, Hamble: 2/10-m, 22/7-m, 15/6.7-m, and 5/5.5 m. Four Cheverton 8.2-m launches are also in use.

NIGERIAN COAST GUARD

PATROL CRAFT

• 15 Type Mk 2 AM patrol craft Bldr: Intermarine, La Spezia

| | In serv. | | In serv. | | In serv. |
|------------------|----------|--------------|----------|---------------------|----------|
| Р 200 Авеокита | 7-81 | P 205 IKEJA | 9-81 | P 210 Maidugiri | 4-82 |
| P 201 AKURE | 7-81 | P 206 ILOREN | 11-81 | P 211 MINNA | 4-82 |
| P 202 Bauchi | 7-81 | P 207 Jos | 11-81 | P 212 Ourerri | 4-82 |
| P 203 BENIN CITY | 7-81 | P 208 KADUNA | 11-81 | P 213 PORT HARCOURT | 4-82 |
| P 204 Enugu | 9-81 | P 209 Kano | 4-82 | P 214 Sокото | 4-82 |



Port Harcourt (P 213)

C. Martinelli, 3-82

D: 20 tons (fl) S: 35 kts Dim: 18.2 (16.5 pp) × 5.0 × 0.85 A: 1/20-mm AA — 2/7.62-mm mg (I × 2)

M: 2 MTU 8V331 TB91 diesels; 2 Castoldi waterjets; 2,700 hp Range: 300/32 Man: 9 tot.

Remarks: Ordered 10-78. Glass-reinforced plastic construction.

♦ 1 "Tracker" class Bldr: Fairey Marine, Hamble, U.K. (In serv. 2-78)

D: 31 tons (fl) S: 24 kts Dim: 19.3 × 5.0 × 1.5 A: 1/20-mm AA M: 2 diesels; 2 props; 1,290 hp Range: 650/20 Man: 11 tot.

◆ 2 "Spear" class Bldr: Fairey Marine, Hamble, U.K. (In serv. 1978)

D: 4.3 tons S: 25 kts Dim: 9.1 × 2.8 × 0.8

NIGERIA (continued)

MARINE POLICE

Note: For operations on the Niger River and Lake Chad. All craft built of glass-reinforced plastic. In addition to the craft listed below, in 4-82 it was announced that 4 13-m glass-reinforced plastic, 48 6.4-m aluminum, 34 5.5-m glass-reinforced plastic, and 30 4.9-m aluminum patrol craft and 3 4.9-m hovercraft were to be procured. Two patrol craft were ordered 5-84 from Fairey Allday Marine, U.K.

PATROL AND SERVICE CRAFT

• 6 14 m Bldr: Schöttel, the Netherlands (In serv. 1982)

+ 48 m Bldr: Copeland, U.K. (In serv. 1982)

Bldr: Halmatic, Havant, U.K. (In serv. 1982-83) ♦ 129.8 m

D: 5.5 tons (6.5 fl) **S**: 25 kts **Dim**: 9.8 (8.8 wl) \times 3.4 \times 0.9 M: 2 Mermaid diesels; 2 props; 360 hp Man: 4-6 tot.

Remarks: Ordered 8-1-81. Glass-reinforced plastic construction.

♦ 10 Tiger-class air-cushion vehicles Bldr: Air Vehicles, Cowes, U.K. (In serv.: 5 in 8-82; 5 in 1984-85)

D: 1 ton (fl) S: 34 kts Dim: 8.45 × 4.57 × 2.81 (high) A: 1 diesel engine; 1 lift fan/1 prop; 200 hp Man: 12 tot.

Bldr: Pindair, U.K. (In serv. 1982) • 2 Skima 12 hovercraft

♦ 13 Skua Q33 class Bldr: Horne Bros., Fishbourne, U.K. (In serv. 1981-82)

D: 5 tons (fl) **S:** 30 kts **Dim:** $7.9 \times 2.8 \times 0.4$

M: 2 Volvo Penta AQAD-40/280 diesels; 2 outdrive props; 310 hp

Man: 2-4 tot.

♦ 3 Q26-class landing craft Bldr: Horne Bros., Fishbourne, U.K. (In serv. 1982)

 $\begin{array}{lll} \textbf{D:} \ 17 \ tons \ (fl) & \textbf{S:} \ 35 \ kts & \textbf{Dim:} \ 10.0 \times 3.5 \times 0.75 \\ \textbf{A:} \ 2/7.62 \text{-mm mg} \ (I \times 2) & \textbf{Man:} \ 2 \ crew, plus \ 24 \ police \ troops \end{array}$

M: 2 Sabre diesels; 2 props; 500 hp

♦ 1 P 1200 class Bldr: Watercraft, Ltd., Shoreham, U.K. (In serv. 2-81)

D: 9.7 tons (fl) S: 27 kts Dim: 11.9 × 4.1 × 1.1

M: 2 G.M. 8V71 TI diesels; 2 props; 480 hp Range: 240/25

Bldr: Watercraft, Shoreham, U.K. (In serv. 12-80)

D: 3.2 tons (fl) **S:** 26 kts **Dim:** $8.0 \times 2.6 \times 0.8$

M: 1 Volvo AQAD-40 outdrive diesel; 1 prop; 150 hp Range: 104/26

Bldr: Vosper Thornycroft (In serv. 1971-72)

D: 15 tons (fl) S: 19 kts Dim: 10.4 × 3.1 × 0.9

M: 2 Rolls-Royce diesels; 2 props; 290 hp

Bldr: Fairey Marine, Hamble, U.K. (In serv. 1982) • 8 7-meter work boats

CUSTOMS SERVICE

• 1 patrol boat Bldr: Chung Mu SY, Hong Kong

YAN-YAN (In serv. 14-9-83)

D: 100 tons (fl) **S**: 27.5 kts **Dim**: 34.0 (32.0 wl) \times 6.0 \times 1.34 M: 2 MTU 12V396 TB93 diesels; 2 props; 3,560 hp

Fuel: 13 tons Man: 12 tot.

◆ 6 Watercraft 18-ton, 18-kt patrol craft (In serv. 1982)

ORWAY

Kingdom of Norway

PERSONNEL (1985): 8,750 men, 2,000 of whom are in the Coast Artillery

MERCHANT MARINE (1984): 2,271 ships - 17,662 grt

(tankers: 235 ships - 11,741,315 grt)

NAVAL AVIATION: The Norwegian Navy does not have an air arm, as such. However, two of the Air Force's formations are assigned to naval missions, usually reconnaissance and ASW patrol; a squadron of 10 Sea King Mk 43 and 20 UH-1D search-and-rescue helicopters; a group of 7 P-3B Orion patrol aircraft and 4 De Havilland Twin Otter utility aircraft. Two Boeing 737 "Surveiller" with SLAMMAR side-looking radars have been ordered for maritime patrol. In addition, 20 Bell UH-1D helicopters operate in the search-and-rescue role. The Coast Guard operates 6 WG-13 Lynx Mk 86 helicopters. The Penguin Mk 3 anti-ship missile is being acquired to permit Royal Norwegian Air Force F-16 fighters to attack ships.



P-3B Orion - Royal Norwegian Air Force

Official



Sea King Mk 43-Royal Norwegian Air Force

Official

WEAPONS AND SYSTEMS

The Norwegian Navy uses mostly British, American, and Swedish weapons and systems, but it has built two systems of its own, the Terne automatic ASW defense system and the Penguin surface-to-surface missile, which are described below. Submarines are equipped with Swedish T-61 (45 kts, 20,000 m) or American NT37C (20,000 m) and Mk 37 Mod. 2 wire-guided torpedoes. Norway has also developed its own radar and electro-optical gun and missile fire-control systems. Sonars are manufactured by the Simrad Co.

Terne Mk III (ASW)

Maximum range: 900 m

1 search sonar

1 attack sonar ("Terne Mk 3" for range/depth determination)

1 computer

1 sextuple launcher mount with a rapid-reloading system.

The sextuple launcher mount weighs a little less than 3 tons. Firing is done between 45° and 75° of elevation, the latter for minimum range. Six rounds are ripple-fired at a time. Reloading is done automatically in 40 seconds, as the carriage is returned to a vertical position, in which ready-service racks reload the launchers. The rocket is 1.97 m in length, 0.2 m in diameter, 120 kg in weight (warhead: 48 kg), and has a combination timed and proximity fuse. Employed on the Oslo and Sleipner classes.

Penguin Mk 1 (Anti-ship)

Length: 2.95 m Maximum range: 20,000 m

Wingspan: 1.4 m Speed: Mach 0.7

Guidance: infrared homing Diameter: 0.28

Weight: 330 kg

The missile is protected by a fiberglass container that also serves as a launcher.

Penguin Mk 2 (Anti-ship)

Length: 2.96 m Maximum range: 27,000 m

Speed: Mach 0.8 Wingspan: 1.42 m

Diameter: 0.28 m Guidance: Infrared homing Weight: 340 kg Warhead: 120 kg Bullpup Mk 19

Note: A Mk 2 Mod. 7, helicopter-launched version is being developed for the U.S. Navy.

Penguin Mk 3 (Anti-ship, air-launched)

Length: 3.20 m Maximum range: 40,000+ m

Wingspan: 2.00 m Speed: Mach 0.8

Diameter: 0.28 m Guidance: Infrared homing

Weight: 350 kg (400 with launcher) Warhead: 120 kg Penguin Mk 3 can be launched at altitudes of 150 to 30,000 ft.

Single-barrel automatic gun mounted on the Storm-class patrol boats. Not intended for AA. Also used by the Singapore Navy.

Turret weight (no ammunition):

6.5 tons

Length: 50 calibers

Muzzle velocity: 825 m/sec

Rate of train: 25°/sec Rate of elevation: 25°/sec Rate of fire: 30 rounds/min Cartridge weight: 11.3 kg Shell weight: 5.9 kg Warhead weight: 0.54 kg

Maximum range, surface mode: 8,000 m

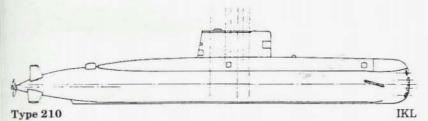
Arc of elevation: -10° to +30°

RE

F 3

SUBMARINES

| • 0 (+6) German 7 | Гуре 210 | Bldr: T | hyssen Nordseewerke, Emde |
|-------------------|-----------|---------|---------------------------|
| | Laid down | L | In serv. |
| S N | | | 3-89 |
| S N | | | 5-90 |
| S N | | | 11-90 |
| S N | | | 5-91 |
| S N | | | 11-91 |
| S N | 1.4.7 | | 5-92 |
| | | | |



D: 940 tons standard, 1,040 tons surf. (fl)

S: 11/23 kts Dim: 59.00 × 5.40 × 4.50

A: 8/533-mm TT (14 German Seeal 3, DM2A3 torpedoes)

Electron Equipt: Radar: . . . — Sonar: Krupp Atlas DBQS-21D M: 2 MTU 16V652 MB 1,260-bhp diesels, 2/870-kw generator sets, electric drive; 1 prop; 6,000 hp

Range: 5,000/8 (snorkel) Endurance: 40 days

Fuel: 100 tons Man: 18-20 tot.

Remarks: Six ordered 30-9-82, with option to order two more, later dropped. Will have Kongsberg MSI-90U torpedo f.c.s. Diving depth: 250 m.

| ♦ 14 German Type 207 | | Bldr: Rheinstahl-Nordseewerke, Emden | | | | |
|----------------------|----------|--------------------------------------|---------------|----------|----------|--|
| | L | In serv. | | L | In serv. | |
| S 300 ULA | 19-12-64 | 7-5-65 | S 307 STADT | 10-6-66 | 15-11-66 | |
| S 301 UTSIRA | 11-3-65 | 1-7-65 | S 308 STORD | 2-9-66 | 9-2-67 | |
| S 302 Utstein | 19-5-65 | 9-9-65 | S 309 SVENNER | 27-1-67 | 1-7-67 | |
| S 303 UTVAER | 30-6-65 | 1-12-65 | S 315 KAURA | 16-10-64 | 5-2-65 | |
| S 304 UTHAUG | 8-10-65 | 16-2-66 | S 317 Kya | 20-2-64 | 15-6-64 | |
| S 305 SKLINNA | 21-1-66 | 17-8-66 | S 318 KOBBEN | 25-4-64 | 17-8-64 | |
| S 306 SKOLPEN | 24-3-66 | 17-8-66 | S 319 Kunna | 16-7-64 | 1-10-64 | |



Kobben (S 318)

L. & L. Van Ginderen, 1978

D: 370/482 tons S: 13.5/17 kts Dim: 45.41 (S 309:46.41) × 4.6 × 3.80 A: 8/533-mm TT, fwd (8 Swedish Type 61 and U.S. NT37C torpedoes) Electron Equipt: Radar: 1/Thomson-CSF Calypso — Sonar: Krupp Atlas. M: 2 Mercedes-Benz MB 820Db, 600-hp diesels, 2 405-kw generators, 1 1,100-kw motor; 1 prop (2.3 m diameter); 1,700 hp Man: 17 tot.

Remarks: Based on the West German Type 205, but deeper-diving. MSI-700 torpedo fire-control. The Svenner is equipped for training, has a second periscope, and is one meter longer than the others. Diving depth: 190 m. Use MSI-70U torpedo fire-control system. Six are to be modernized, to complement the new Type 210 class; three others are to be transferred to Denmark. Sister Kinn (S 316) stricken 1982.

GUIDED-MISSILE FRIGATES

| • 5 Oslo class | Bldr: Marine | ens Hovedve | erft (Naval Dockyard), Horten |
|--|--------------|--------------------|-------------------------------|
| F 200 O | Laid down | L | In serv. |
| F 300 OSLO F 301 BERGEN | 1963 1963 | 17-1-64 23-8-65 | 29-1-66 15-5-67 |
| F 302 TRONDHEIM | 1963 | 4-9-64 | 2-6-66 |
| F 303 STAVANGER F 304 NARVIK | 1964 1964 | 4-2-66 8-1-65 | 1-12-67 30-11-66 |
| F 302 TRONDHEIM F 303 STAVANGER F 304 NARVIK | 1963 1964 | 4-9-64 4-2-66 | 2-6-66 1-12-67 |



Stavanger (F 303)

L. & L. Van Ginderen, 4-85



Narvik (F 304) - with 2/20-mm AA added

G. Gyssels, 3-85

D: 1,450 tons (1,850 fl) S: 25 kts Dim: 96.62 (93.87 pp) × 11.17 × 4.4 A: 6/Penguin SSM-1/NATO Sea Sparrow system (VIII × 1, 24 missiles) -4/ 76.2-mm DP (II \times 2) -2/20-mm Rheinmetall AA (I \times 2) -1/Terne-III ASW RL (VI × 1) -6/324-mm Mk 32 ASW TT (II × 2) -1/d.c. rack (6 d.c.) Electron Equipt: Radar: 1/Decca TM 1226, 1/DRBV 22, 1/H.S.A. M 24, 1/U.S.

Mk 91 Mod. 0 Sonar: 1/Terne Mk 3 attack, 1/SQS-36-EW: . . .

M: 1 set Laval-Ljungstrom PN 20 GT; 1 prop; 20,000 hp

Electric: 1,100 kw Boilers: 2 Babcock & Wilcox; 42.18 kg/cm², 454°C

Range: 4,500/15 Man: 11 officers, 19 petty officers, 120 men

Remarks: Based on the U.S. Dealey-class destroyer escorts, but with higher free board forward and many European subsystems. Rebuilt during the late 1970s with the Penguin anti-ship missile, NATO Sea Sparrow point-defense SAM, and ASW torpedo tubes. In the Sea Sparrow system, the Mk 91 radar director is on a pylon atop the missile-reload magazine; the launcher is a U.S. Mk 29. F 304 conducted trials during 1980 with the Raytheon C-LAS C-band acquisition radar.

Beginning in 1987, all to be modernized, with Thomson-CSF TSM 2633 (Spherion) sonar in place of the U.S. AN/SQS-36, a VDS (requiring replacement of the aft 76.2-mm gunmount with a 40-mm AA mount), digital (vice analog) weapons-control

systems, rocket decoy system added, and habitability improvements.

CORVETTES

 2 Sleipner class Bldr: Nylands Verksted, Oslo

L In serv. In serv. F 310 SLEIPNER 9-11-63 29-4-65 F 311 AEGER 24-9-65 31-3-67



Aeger (F 311)

G. Gyssels, 8-82

D: 600 tons (790 fl) S: 20 + kts Dim: 69.33 × 7.9 × 2.5

A: 1/76.2-mm Mk 34 DP — 1/40-mm AA — 1/Terne-III ASW RL (VI × 1) — 6/324-mm Mk 32 ASW TT (III × 2) - 1/d.c. rack (6 d.c.)

Electron Equipt: Radar: 1/Decca TM 1226, 1/Decca 202 Sonar: 1/Terne Mk 3 attack, 1/SQS-36

M: 4 Maybach diesels; 2 props; 9,000 hp Man: 61 tot.

Remarks: From the 1960 program. Now employed primarily for training. U.S. Mk 63 GFCS replaced by 2 Swedish TVT 300 optronic systems. The AN/SQS-36 sonar is to be replaced by a Thomson-CSF TSM2633 (Spherion) set.

Bldr: Stord Verft (L: 1951) • 1 former whale-catcher

P 340 VADSØ

D: 600 tons (905 fl) S: 12 kts Dim: 51.0 × 9.0 × 4.1

A: 1/40-mm AA — 1/d.c. rack

Electron Equipt: Radar: 1/Decca 1226, 1/Decca 202

Sonar:

M: 1 M.A.K. 8M451 diesel; 1 prop; 1,400 hp Range: 15,000/12 Man: 22 tot.

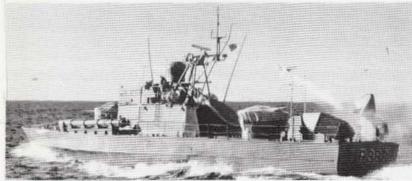
Remarks: Purchased in 1976 and refitted for local patrol duties. The AA gun is mounted on what was the harpoon-gun platform at the extreme bow; the depth-charge rack is on a platform extending aft from the superstructure.

P 999 ERLE

GUIDED-MISSILE PATROL BOATS

| • 14 Hauk class Alta | | Bldrs: (A) | Bergens Mekanis | ke Verksteder; (B) Westamarin | | |
|-------------------------|-------------|------------|-----------------|-------------------------------|-------|--|
| | | Bldr | L | In serv. | | |
| | P 986 HAUK | A | 2-77 | 17-8-78 | | |
| | P 987 ØRN | A | 2-78 | 19-1-79 | | |
| | P 988 TERNE | A | 5-78 | 13-3-79 | | |
| | P 989 TJELD | A | 8-78 | 25-5-79 | | |
| | P 990 SKARV | A | 10-78 | 17-7-79 | | |
| | P 991 TEIST | · A | 6-12-78 | 11-9-79 | | |
| | P 992 Jo | A | | 1-11-79 | | |
| | Р 993 Lом | A | | 15-1-80 | | |
| | P 994 STEGG | A | | 18-3-80 | | |
| | P 995 FALK | A | | 30-4-80 | | |
| | P 996 RAVN | В | * (*) * | 20-5-80 | | |
| | P 997 GRIBB | В | | 10-7-80 | | |
| | P 998 GEIR | В | | 16-9-80 | tal - | |

10-12-80



Terne (P 988) firing Penguin Mk2

Official



Erle (P 999)

G. Koop, 5-84

D: 130 tons (155 fl) S: 35 kts Dim: 36.53 × 6.3 × 1.65 A: 2-6/Penguin Mk II SSM (I×6)—1/40-mm Bofors AA—1/20-mm Rheinmetall AA—2/533-mm TT for T-61 wire-guided torpedoes Electron Equipt: Radar: 2/Decca TM 1226—Sonar: Simrad SQ3D/SF M: 2 MTU 16V538 TB92 diesels; 2 props; 7,340 hp Range: 440/34 Man: 22 tot.

REMARKS: MSI-80S fire-control system, developed by Kongsberg, uses two Decca radars plus a TVT-300 electro-optical tracker and an Ericssen laser range finder. Have 2/50-mm flare RL.

6 Snögg class

Bldr: Båtservice Verft, Mandal, 1970-71

P 980 Snögg (ex-Lyr)

P 982 SNARR

P 984 Kvik

P 981 RAPP

P 983 RASK

P 985 KJAPP



Snarr (P 982) - 4 Penguin Mk 1 aboard

J.-C. Bellonne, 1974

D: 115 tons (140 fl) S: 36 kts Dim: 36.53 × 6.3 × 1.65

A: 2-4/Penguin Mk I SSM (I × 4) - 1/40-mm AA - 4/533-mm TT for T-61 wire-guided torpedoes - 2/d.c. racks

Electron Equipt: Radar: 1/Decca TM 626, 1/PEAB TORI fire control M: 2 MTU 16V538 TB92 diesels; 2 props; 7,200 hp

Range: 550/36 Man: 3 officers, 17 men

• 19 Storm class Bldrs: P 963, P 966, P 969, P 972, P 975, and P 978: Westermöen, Mandal; Others: Bergens MV

| | L | | L | | L |
|--------------|----------|--------------|----------|-------------|---------|
| P 960 STORM | 19-3-63 | P 967 SKUDD | 25-3-66 | P 974 Brott | 27-1-67 |
| P 961 BLINK | 28-6-65 | P 968 ARG | 24-5-66 | P 975 ODD | 7-4-67 |
| P 962 GLIMT | 27-9-65 | P 969 STEIL | 20-9-66 | P 977 Brask | 27-5-67 |
| P 963 SKJOLD | 17-2-66 | P 970 Brann | 3-7-66 | Р 978 Рокк | 1-6-67 |
| P 964 TRYGG | 25-11-65 | P 971 Tross | 29-9-66 | P 979 GNIST | 15-8-67 |
| P 965 KJEKK | 27-1-66 | P 972 Hvass | 20-12-66 | | |
| P 966 Djerv | 28-4-66 | P 973 Traust | 18-11-66 | | |



Hvass (P 972) - 6 Penguin missiles aboard

G. Koop, 5-84

D: 100 tons (125 fl) S: 37 kts Dim: 36.53 × 6.3 × 1.55 A: 4-6/Penguin Mk I SSM (I × 6) -1/76-mm -1/40-mm AA

Electron Equipt: Radar: 1/Decca TM 1226, 1/H.S.A. WM-26 fire-control

M: Mayback MB 872A diesels; 2 props; 7,200 hp Range: 550/36

Man: 4 officers, 9 petty officers, 13 men

REMARKS: Backfitted with TVT-300 electro-optical tracker and laser range finder, in a tub abaft the radar mast. Diesels are essentially the same as those in the Hauk and Snögg classes above. Two d.c. racks can be carried in lieu of the after two Penguin containers. Pil (P 976) reported stricken 1982.

MINE WARFARE SHIPS

 2 Vidar-class minelayers Bldr: Mjellem & Karlsen, Bergen

Laid down In serv. N 52 VIDAR 21-10-77 1-3-76 18-3-77 N 53 VALE 1-2-76 10-2-78 5-8-77



Vale (N 53)

G. Koop, 4-85

D: 1,500 tons (1,722 fl) S: 15 kts Dim: 64.8 (60.0 pp) × 12.0 × 4.0

A: 2/40-mm AA (I × 2) − 6/324-mm Mk 32 ASW TT (II × 2) − 2/d.c. racks −

Electron Equipt: Radar: 2/Decca 1226 — Sonar: Simrad SQ3D M: 2 Wichmann 7AX diesels; 2 props; 4,200 hp Electric: 1,000 kw

Remarks: Capable of serving as minelayers (mines carried on three decks, automatic hoist, three mine-laying rails), torpedo-recovery ships, personnel and cargo transports, fisheries-protection ships, and ASW escorts. Bow-thruster fitted.

◆ 1 inshore mine-planter

Fuel: 247 tons Man: 50 tot.

Bldr 29-4-60 N 51 BORGEN Marinens Hovedverft, Horten

D: 282 tons (fl) S: 9 kts Dim: 31.28 × 8.0 × 3.35

A: 2/20-mm AA ($I \times 2$) — 2 mine rails M: 2 G.M. 3-71 diesels; 2 Voith Schneider cycloidal props; 330 hp

Remarks: Patterned on the Swedish MUL-12 class. Designed to "plant" controlled mines by crane.

♦ 10 U.S. Falcon-class minesweepers Bldrs: M 315, M 332, M 334: Båtservice Verft, Mandal; M 316: Skåluren, Rosendal; M 331: Forenede Båtbyggeri, Risör; M 311, M 313, M 314, M 317: Hodgdon Bros., Gowdy & Stevens, Boothbay, Maine; M 312: C. Hiltebrant DD, Kingston, New York

| | In serv. |
|---------------------------------------|----------|
| M 311 Sauda (ex-MSC 102) | 25-8-53 |
| M 312 Stra (ex-MSC 132) | 28-11-55 |
| M 313 TANA (ex-Roeslaere, ex-MSC 103) | 9-53 |

MINE WARFARE SHIPS (continued)

| M 314 ALTA (ex-Arlon, ex-MSC 104) | 10-53 |
|--|---------|
| M 315 Ogna | 5-3-55 |
| M 316 Vosso | 16-3-55 |
| M 317 GLOMMA (ex-Bastogne, ex-MSC 151) | 12-53 |
| M 331 Tista | 27-4-55 |
| M 332 Kvina | 12-7-55 |
| M 334 Utla | 15-1-55 |



Tana (M 313) - minehunter, deckhouse aft

L. & L. Van Ginderen, 6-81



Kvina (M 332)

G. Gyssels, 7-83

D: 300 tons (372 fl) S: 13 kts (8, sweeping) Dim: 43.0 × 7.95 × 2.55

A: 2/20-mm Rheinmetall AA (I × 2)

Electron Equipt: Radar: 1/Decca 202 or 1226

Sonar: 1/UQS-1 (M 313: 1/193 M)

M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp Fuel: 40 tons

Range: 2,500/10 Man: 38 tot.

REMARKS: Tana, Alta, and Glomma were transferred by Belgium in 1966 in exchange for two ocean minesweepers, Lagen and Namsen. In 1977, Tana was converted to a prototype minehunter, with British type 193M sonar, two PAP-104 remote-controlled minehunting devices, and divers' facilities in a large deckhouse aft. She was rearmed with 2/20-mm Rheinmetall AA guns (I \times 2), now backfitted into the others. At the waterline, across the stern, she has a platform for diver-recovery; this extends her overall length by more than one meter.

Note: The Falcon class is programmed to be replaced by a class of 8 minehunters in the late 1980s/early 1990s.

AMPHIBIOUS WARFARE SHIPS

 5 Reinøysund-class utility landing craft Bldr: Mjellem & Karlsen, Bergen (In serv. 1972-73)

L 4502 REINØYSUND L 4504 Maursund L 4506 Borgsund

L 4503 SØRØYSUND L 4505 ROTSUND

D: 596 tons (fl) S: 11 kts Dim: 51.4 × 10.3 × 1.85

A: 3/20-mm Rheinmetall (I × 3) -4/12.7-mm mg - rails for 120 mines

M: 2 MTU diesels; 2 props; . . . hp Man: 2 officers, 7 men

Remarks: Double-folding bow-ramp door. Cargo capacity: 5 Leopard tanks, 80-180 men. Similar to class below, but superstructure is farther forward.

• 2 Kvalsund-class utility landing craft

Bldr: Mjellem & Karlsen, Bergen

L 4501 RAFTSUND (In serv. 3-69) L 4500 KVALSUND (In serv. 6-68)

D: 590 tons (fl) S: 11 kts Dim: 50.0 × 10.2 × 1.8

A: 2/20-mm AA-rails for 120 mines

M: 2 MTU diesels; 2 props; . . . hp Man: 2 officers, 7 men

Remarks: Cargo capacity: 5 Leopard tanks, 80-180 men.

AUXILIARY SHIPS

Note: The 14,989 grt auto/passenger ferry Peter Wessel was acquired 9-85 for conversion to a casualty evacuation ship with a medical staff of 450 and facilities for 800 seriously wounded and 1,200 lightly wounded troops. Subordination of the ship not reported. A second ship may also be obtained.

1 logistic-support ship

Bldr: Horten Verft, Horten

Laid down A 530 HORTEN 28-1-77

L

In serv.

12-8-77 9-6-78



Horten (A 530)

1978

D: 2,500 tons (fl) S: 16.5 kts Dim: 87.0 (82.0 pp) × 13.7 × .

A: 2/40-mm AA (I × 2) - mines Electron Equipt: Radar: 2/Decca. . .

M: 2 Wichmann 7AX diesels; 2 props; 4,200 hp

Man: 86 tot.

REMARKS: Used to support submarines and small combatants, Can accommodate up to 190 additional personnel. Helicopter deck. Bow-thruster.

1 oceanographic-research ship

Bldr: Orens MV, Trondheim (In serv. 1960)

H. U. SVERDRUP (ex-U.S. AGOR 2)

D: 400 tons (fl) S: 11.5 kts Dim: 38.89 × 7.62 × 3.30

M: 1 Wichmann diesel; 1 prop; 600 hp Electric: 104 kw

Fuel: 65 tons Range: 5,000/10

Man: 10 men + 9 scientists

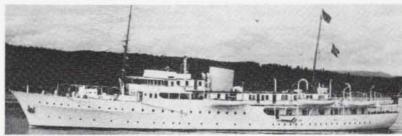
Remarks: 295 grt trawler hull. Operates for the Norwegian Defense Research Establishment and has a civilian crew. Purchase and outfitting financed by the U.S.A. under the Offshore Procurement Program.

• 1 royal yacht

A 533 Norge (ex-Philante)

Bldr Camper & Nicholson's Ltd., Gosport

17-2-37



Norge (A 533)

1971

D: 1,686 tons S: 17 kts Dim: 76.27 × 8.53 × 4.65 M: 2 8-cyl. diesels; 2 props; 3,000 hp Electric: 300 kw Fuel: 175 tons Range: 9,900/17

REMARKS: Built as a yacht, then used by the Royal Navy as an ASW escort from 1940 to 1943, then as a training ship. Purchased by Norway in 1948. Displacement listed is in Thames Yacht Measurement. Can carry 50-passenger royal party.

SERVICE CRAFT

 1 torpedo-recovery and oil-spill cleanup ship dinger (In serv. 10-78)

Bldr: Fjellstrand, Har-

VSD 1 VERNØY

D: 150 grt S: 12 kts Dim: 31.3 × 6.67 × 2.0

M: 2 MWM diesels; 2 Schöttel props; . . . hp

SERVICE CRAFT (continued)

• 7 Torpen-class support tenders

| Bldr | In serv. |
|---------------------------|---|
| Båtservice, Mandal | 12-77 |
| Voldnes, Fosnavåg | 1-78 |
| Båtservice, Mandal | 2-78 |
| Båtservice, Mandal | 3-78 |
| Voldnes, Fosnavåg | 4-78 |
| Voldnes, Fosnavåg | 6-78 |
| P. Høivolds, Kristianstad | 7-78 |
| | Båtservice, Mandal Voldnes, Fosnavåg Båtservice, Mandal Båtservice, Mandal Voldnes, Fosnavåg Voldnes, Fosnavåg |



Torpen (VSD 4)

L. & L. Van Ginderen, 9-82

D: 215 tons (300 fl) S: 11 kts Dim: 29.0 × 6.4 × 2.57

A: 1/12.7-mm mg M: 1 MWM TBD 601-6K diesel; 1 CP prop; 530 hp

Electron Equipt: Radar: 1/Decca 1226

Fuel: 11 tons Range: 1,200/11 Man: 6 men + 100 passengers

Remarks: Basically similar craft tailored to a variety of duties, including logistics support, ammunition transport, personnel transport, and divers' support. Cargo: 100 tons.

• 2 navigational training craft

Bldr: Fjellstrand, Omastrand (In serv. 1-78)

P 358 HITRA (ex-Kvarnen, VSD 6)

P 359 Vigra (ex-Marsteinen, VSD 2)



Vigra (P 359)

Norwegian Navy, 1982

D: 40 tons
 S: 22 kts
 Dim: 23.2 × 5.0 × 1.1
 A: 1/12.7-mm mg
 M: 2 G.M. 12V71 diesels; 2 props; 1,800 hp
 Man: 5 men + 8 cadets

Remarks: Aluminum construction. For use at the Naval Academy. Renamed and renumbered 1981.

♦ 2 tenders for combat divers Bldr: Nielsen, Harstad (In serv. 1972)

A 531 SARPEN (ex-VDS 11, ex-SKV 11) A 532 DRAUG (ex-SKV 10)

D: 250 tons S: 12 kts Dim: 29.0 × 6.7 × 2.5 M: 1 diesel; 1 prop; 530 hp

Remarks: Renumbered 1982. Support frogmen.



Sarpen (A 531) - old number

Norwegian Navy, 1981

♦ 1 harbor tug Bldr: F. Schichau, Königsberg, Germany (In serv. 1938)

VSD 7 Samson

D: 303 grt S: 11 kts Dim: 38.7 × 8.0 × 3.25 M: 1 MWM diesel; 1 prop; 650 hp Range: 2,900/10

♦ 1 harbor tug Bldr: Atlas Werke, Bremen, Germany (L: 6-2-39)

VSD 13 RAMNES (ex-German Robbe)

D: 101 grt S: 10 kts Dim: 24.0 × 5.70 × 2.45 M: 1 diesel; 250 hp

◆ 2 local patrol craft Bldr: Fjellstrand Yacht, Omastrand

RSD23 Tarva (In serv. 1-12-74) ØSD1 Welding (In serv. 1-11-74)

D: 27.5 tons (fl) S: 15 kts Dim: $16.3 \times 5.3 \times 1.2$ A: 1/12.7-mm mg Electron Equipt: Radar: 1/Decca. . . M: 2 G.M. diesels; 2 props; 480 hp Man: 4 tot.

♦ 1 or more personnel launches

SKO 122 FULDIN-No data available

Note: Other service craft, for which no data are available, include: SKV 20, Gleodden, Varodden, VSD 8, VSD 20, VSD 63, VSD 10, Foracs, Petra, SKØ 121, Fjordbåt, SKS 55, SSD 8, Akerøy, Sigurd A. (RSD 21), RØS 27, Kjeøy, VSD 3, Torpedofisken, Arnøy, Folden, NSD 33, NSD 81, NSD 84 and ØESD 66.

COAST GUARD (KYSTVAKT)

The Norwegian Coast Guard was established in 1976 to perform fisheries-protection duties, patrol the waters in the vicinity of offshore oil rigs, and maintain surveillance over the 200-nautical-mile economic zone. The Coast Guard operates six WG-13 Lynx Mk 86 helicopters.

PATROL SHIPS

♦ 3 Nordkapp (Type 320) class

| | Bldr | L | In serv. |
|----------------|--------------------|---------|----------|
| W 320 NORDKAPP | Bergens Mek. Verk. | 14-5-80 | 25-4-81 |
| W 321 SENJA | Horten Verft | 16-3-81 | 8-3-81 |
| W 322 Andennes | Haugesund Verk. | 21-3-81 | 30-1-82 |



Andennes (W 322)

Norwegian Navy, 1984

PATROL SHIPS (continued)



Nordkapp (W 320)

Norwegian Navy

D: 2,165 tons light (3,240 ft)
 S: 23 kts
 Dim: 105.00 (97.50 pp) × 13.85 × 4.55
 A: 1/57-mm Bofors AA — 4/20-mm Rheinmetall AA (I × 4) — 6/324-mm Mk 32
 ASW TT (III × 2) — 1/d.c. rack (6 d.c.) — 1/WG-13 Lynx helicopter

 Electron Equipt: Radar: 2/Decca TM 1226, 1/Decca RM914, 1/Plessey AWS-4, 1/PEAB GLF 218 (9LV 200 Mk.2)

Sonar: 1/Simrad SS105

M: 4 Wichmann 9-AXAG diesels; 2 CP props; 14,400 hp Electric: 1,600 kw

Fuel: 350 tons Range: 7,500/15 Man: 42 crew + 6 helo crew (109 accomm.)

Remarks: Program delayed by design changes and lack of funding; four additional units deferred. W 322 and W 323 displace 2,854 tons full load and are not ice-strengthened, as is W 320, intended for service in Arctic waters. In time of conflict, 6 Penguin II anti-ship missiles and chaff launchers are to be added. Fin stabilized. Carry three 300-m³/hr. water cannon for firefighting and have meteorological reporting gear. The Kongsberg MSI-805 NAVKIS data system is fitted. Wartime crew: 75 total.

♦ 1 former stern-haul trawler

Bldr: Båtservice, Mandal (In serv. 5-78)

W 319 Grimsholm



Grimsholm (W 319)

L. & L. Van Ginderen, 6-82

D: 1,189 grt S: . . . kts Dim: 62.71 (54.60 pp) × 11.63 × 6.43 A: 1/40-mm AA M: 1 MaK 9-cyl. diesel; 1 prop; 3,400 hp Electric: 524 kw REMARKS: Chartered 1980. Side-thrusters fore and aft.

◆ 1 former stern-haul trawler Bldr: Brødrene Lothes, Haugesund (In serv. 7-78)

W 317 Lafjord

D: 814 grt **S:** 14.6 kts **Dim:** $55.40 \times 9.81 \times 6.18$ **A:** 1/40-mm AA **M:** 1 Wichmann 7-cyl. diesel; 1 prop; 2,100 hp **Electric:** 419 kw **Fuel:** 220 tons **Range:** 7,700/14.6

Remarks: Chartered 1980. Side-thrusters fore and aft.

♦ 1 former stern-haul trawler Bldr: Smedvik, Tjørråg (In serv. 4-78) W 315 Nordsjøbas

D: 814 grt S: 13.5 kts Dim: 52.04 (44.75 pp) × 10.01 × 6.55 A: 1/40-mm AA Electric: 1,088 kw Range: 8,300/13.5 M: 1 MaK 6-cyl. diesel; 1 prop; 2,400 hp Fuel: 180 tons

REMARKS: Chartered 1980. Side-thrusters fore and aft.

◆ 1 former purse seiner Bldr: Hall-Russell, Aberdeen, Scotland (In serv. 3-51)
W 312 Sørfold (ex-Olafur Jöhannesson, ex-Andvan)

D: 773 grt S: 12 kts Dim: 61.37 (55.06 pp) × 9.2 × 4.88 A: 1/40-mm AA M: 1 Werkspoor 8-cyl. diesel; 1 CP prop; 2,660 hp Electric: 175 kw Fuel: 80 tons Man: . . .

Remarks: Chartered from Oddvar Jöhannesson in 1977. Side-thrusters fore and aft.

♦ 1 former trawler

Bldr: Kvina Verft/Flekkefjord MV (In serv. 11-55)

W 313 Møgsterfjord

D: 768 grt S: 12 kts Dim: 60.86 (55.01 pp) × 12.0 × 3.9 A: 1/40-mm AA M: 1 Wichmann 9-cyl. diesel; 1 prop; 2,500 hp Electric: 786 kw Man: . . .

Remarks: Chartered from Kommandittelskapel Møgster in 1977. Bow-thruster.

♦ 1 former purse seiner Bldr: Beliard, Crighton & Cie., France (In serv. 1955)

W 314 STÄLBAS (ex-Trålbas, ex-Cdt. Charcot, ex-Jean Charcot)

D: 498 grt S: . . . Dim: 58.76 × 9.41 × 4.51

A: 1/40-mm AA M: 1 Klöckner-Humboldt-Deutz 8-cyl. diesel; 1 prop; 1,500 hp Man: . . .

REMARKS: Side-thrusters fitted, fore and aft.

1 former whale-catcher

Bldr: Fredrikstad MV (In serv. 1950)

W 316 Volstad Jr. (ex-XIV)



Volstad Jr. (W 316)

1982

D: 617 grt S: . . . Dim: 51.39 (45.32 pp) × 9.05 × 5.67

A: 1/40-mm AA

M: 2 Klöchner-Humboldt-Deutz NE-66 8-cyl. diesel; 1 CP prop; 1,200 hp

Electric: 224 kw Man: . . .

Remarks: Chartered from Einar Volstad Partrederi in 1977. Built as a side-haul trawler, converted to a whaler in 1966, and well deck filled in.

♦ 1 former naval fisheries-protection ship

Bldr

L

W 300 Nornen

Mjellem & Karlsen, Bergen

20-8-62



Nornen (W 300)

1978

D: 1,060 tons (fl) **S:** 17 kts **Dim:** 61.5 × 10.0 × 3.8

A: 1/76.2-mm Mk 26 DP M: 4 diesels; 1 prop; 3,700 hp Man: 32 tot.

Remarks: Considerably altered, 1976-77: bridge enlarged, stack heightened, mast moved aft, hull side openings plated up, two new radars added, gun enclosed.

• 2 former naval fisheries-protection ships

W 301 FARM (ex-A 532) Ankerlokken Verft, Fredrikstad 22-2-62
W 302 Heimdal (ex-A 534) Bolsones Verft, Molde 7-3-62

D: 600 grt
 S: 16.5 kts
 Dim: 54.28 (49.0 pp) × 8.2 × 3.2
 A: 1/40-mm AA
 M: 2 Wichmann 9ACAT diesels; 2 CP props; 2,400 hp
 Electric: 150 kVA
 Man: 29 tot.

Remarks: Modernized 1979 (W 301) and 1980 (W 302) with completely revised superstructure, new bridge resembling *Nornen's*, new armament and revised hull sides along the forecastle.

NORWAY (continued) PATROL SHIPS (continued)



Farm (W 301)

Norwegian Navy, 1984

HYDROGRAPHIC SURVEY SHIP

Bldr: Mjellem & Karlsen, • 1 former Ministry of the Environment ship Bergen

Hydrograf (In serv. 12-67)

D: 302 grt S: 13 kts Dim: 38.95 (35.11 pp) × 7.83 × 2.94 A: 1/40-mm AA M: 1 Bergens Mek. Verk. 6-cyl. diesel; 1 prop; 780 hp Electric: 100 kw Fuel: 38 tons Range: 3,900/13 Man: 3 officers, 15 men

Remarks: Now operated by the Coast Guard for the Ministry of the Environment. No pendant number. The Ministry of the Environment also operates 11 survey ships with its own personnel: Lance (960 tons, in serv. 1978); Sjøvern (215 tons, in serv. 1948); Sjøfalk 70 tons, in serv. 1937); Sjøskvett (80 tons, in serv. 1964); Sjørokk (75 tons, in serv. 1964); Sjødrev (80 tons, in serv. 1973); Sjøtroll (80 tons, in serv. 1976) and Olijevern 01-04 (200 tons, in serv. 1978).

Sultanate of Oman

Personnel (1985): 2,400 total

MERCHANT MARINE (1984): 26 ships - 13,911 grt

GUIDED-MISSILE PATROL BOATS

Bldr: Vosper Thornycroft, Portchester, U.K. • 3 "Province" class

| -8- | Laid down | L | In serv |
|--------------------|-----------|----------|---------|
| B 10 DHOFAR | 39-9-80 | 14-10-81 | 7-8-8 |
| B 11 AL SHARQUIYAH | 10-81 | 2-12-82 | 5-12-8 |
| B 12 AL BAT'NAH | 9-12-81 | 11-82 | 18-1-8 |

D: 311 tons light (363 fl) S: 40 kts Dim: 56.7 (52.0 pp) × 8.2 × 2.1 (hull) A: 6/MM 40 Exocet SSM (III × 2)-1/76-mm OTO Melara DP-2/40-mm Breda AA (II \times 1) -2/12.7-mm mg (I \times 2)

Electron Equipt: Radar: B 11: 1/Decca 1226, 1/Plessey AWS-4; others: 1/Decca TM 1226, 1/PEAB 9LV 300 syst.

. intercept; 2 Wallops Barricade decoy RL (IX × 2)

M: 4 Paxman Valenta 18RP200 diesels; 4 props; 17,900 hp (15,000 sust.) - 2/80 hp electric outdrives

Electric: 420 kw Fuel: 45.5 tons Range: 2,000/15 Man: 40, plus 19 trainees



Dhofar (B 10) - with AWS-4 radar, 6 SSM positions

M. Louagie, 8-82



Al Bat'nah (B 12) - equipped for 8 Exocet

Walles Foto, 3-84

REMARKS: B 8 ordered 1980, others in 1-81. B 8 sailed for Oman 21-10-82. B 10 has the Sperry Sea Archer Mk 2 fire-control sytem, with two optical trackers. Complement includes trainees. B 9, B 10 have 8/MM 40 Exocet (IV \times 2), PEAB 9LV 300 f.c.s. with I-band search radar and J-band radar/electro-optical fire-control director forward and a separate tv./IR director aft for the 40-mm AA.

Bldr: Brooke Marine, Lowestoft, U.K. 1 37.5-m class

B 2 AL MANSUR (In serv. 26-3-73)



Al Mansur (B 2)

1980

D: 162 tons (184 fl) S: 25 kts Dim: 37.50 × 6.86 × 2.20

A: 2/MM 38 Exocet SSM (I × 2) - 2/40-mm Breda AA (II × 1) - 2/7.62-mm mg $(I \times 2)$

Electron Equipt: Radar: 1/Decca 1229

M: 2 Paxman Ventura 16RP200 diesels; 2 props; 4,800 hp

Range: 3,250/12 Man: 4 officers, 28 men

Remarks: Equipped with missiles during 11-77 to 11-78 refit by builder. Have Sperry Sea Archer fire-control systems, Sister Al Bushra (B 1) lost overboard in Bay of Biscay 11-78 while being transported to Oman after a similar conversion, and Al Nejah (B 3) was stricken 1983.

PATROL BOATS

♦ 4 37.5-meter class Bldr: Brooke Marine Ltd., Lowestoft, U.K.

| | In serv |
|---------------|---------|
| B 4 AL WAFI | 24-3-77 |
| B 5 AL FULK | 24-3-77 |
| B 6 AL AUL | 20-7-77 |
| B 7 AL JABBAR | 6-10-77 |



Al Fulk (B 5)

L. & L. Van Ginderen, 9-82

D: 153 tons (166 fl) **S:** 25 kts **Dim:** $37.50 \times 6.86 \times 1.78$ **A:** 1/76-mm OTO Melara DP — 1/20-mm AA — 2/7.62-mm mg (I × 2)

Electron Equipt: Radar: 1/Decca 1226 or 1229

M: 2 Paxman Ventura 16 RP200 diesels; 2 props; 4,800 hp

Range: 3,250/12 Man: 3 officers, 24 men

Remarks: Carry 130 rounds 76-mm ammunition. Sperry Sea Archer fire-control system, with Lawrence Scott optical director.

PATROL CRAFT

♦ 4 25-meter class Bldr: Vosper Pty, Singapore (In serv. 15-3-81)

B 22 AL SADAH B 23 AL KHASAB B 21 AL SHINAS B 20 AL SEEB



25-meter class - on trials

1980

D: 75 tons (fl) **S:** 26 kts **Dim:** 25.0 (23.0 pp) \times 5.8 \times 1.5

A: 1/20-mm AA -2/7.62-mm mg (I \times 2)

M: 2 MTU 12V331 TC92 diesels, plus 1 Cummins N855M diesel; 3 props; 3,072 hp + 197 hp

Range: 750/14; 2,300/8 Man: 13 tot.

Remarks: Ordered 24-4-81. Craft completed 1980 on speculation by builder. Glassreinforced plastic hulls. Have five spare berths. Max. speed on cruise diesel: 8 kts.

Bldr: Cheverton, Cowes (In serv. 1981) 2 Tyler Vortex class

QRB 1 QRB 2

D: 12 tons S: 30 kts Dim: 12.1 (11.5 pp) × 4.6 × . . .

A: . . . M: 2 Sabre 500 diesels; 2 props; 1,000 hp

Remarks: Officially typed as "Quick-reaction Boats."

AMPHIBIOUS WARFARE SHIPS AND CRAFT

♦ 1 new-construction landing ship Bldr: Brooke Marine, Lowestoft, U.K.

Τ. In serv. Laid down L 2 NASR AL BAHR 16-5-84 1984



Nasr Al Bahr (L 2)

Walles Foto, 3-85

D: 2,200 tons (fl) **S:** 15.5 kts **Dim:** 93.00 (80.00 pp) \times 15.50 \times 2.3 (mean)

A: 4/40-mm Breda AA (II × 2) -2/20-mm AA (I × 2)

Electron Equipt: Radar: 1/Decca 1226, 1/Decca 1290

EW: . . . intercept; 2 Barricade RL (IX × 2) M: 2 Paxman Valenta 18RP200CM diesels; 2 CP props; 7,800 hp

Range: 4,000/13 Endurance: 28 days (10 days with troops)

Man: 13 off., 16 chief petty officers, 52 men + troops: 13 officers, 16 non-

commissioned officers, 211 enlisted

Remarks: Ordered 18-3-82. A refined version of the Al Munassir design. Two also built for Algeria. Vehicle deck 75 m × 7.4 m, with 30-m × 7-m cargo hatch; bow ramp 18-m long by 4.5-m wide; stern ramp: 5 m by 4 m. Intended to land 450 tons cargo or seven main battle tanks on a gradient of up to 1:40. Helicopter deck for one Sea King/Commando helicopter. Traveling 16-ton crane spans cargo deck forward. Max. cargo: 650 tons. One Philips PEAB and one CSEE Lynx electro-optical gunsight; 2,000 rds 40 mm, 2,450 rds 20 mm, 244 chaff rounds.

1 for logistic support

Bldr Laid down In serv. L 1 AL MUNASSIR Brooke Marine, Lowestoft 4-7-77 25-7-78 3-4-79

D: 2,169 tons (fl) **S:** 12 kts **Dim:** 84.0 (81.25 pp) \times 15.03 \times 2.15 (max.)

A: 1/76-mm OTO Melara DP-2/20-mm AA (I × 2)



Al Munassir (L 1)

1980

Electron Equipt: Radar: 1/Decca TM 1229

M: 2 Mirrlees-Blackstone ESL8MGR diesels; 2 CP props; 2,400 hp

Range: 2,500/12

Man: 9 officers, 38 men, 188 troops

Remarks: Greatly modified version of British Ardennes class by same builder. Cargo: 550 tons of stores or 8 heavy tanks. Has bow doors and ramp for beaching. Large helicopter deck aft can accommodate Westland Sea King or Commando helicopters and is spanned by a 16-ton-capacity traveling crane. Unusually bluff-bowed hull form. Sperry Sea Archer optical fire-control director.

 3 utility landing craft Bldr: Vosper Pty, Singapore (L: 30-6-81)

| | | Laid down | L | In serv. |
|------|--------------|-----------|----------|----------|
| C8 | SABA AL BAHR | | 30-6-81 | 17-9-81 |
| C 9 | AL Doghas | 9-7-82 | 12-11-82 | 10-1-83 |
| C 10 | AL TEMSAH | 8-9-82 | 15-12-82 | 12-2-83 |

D: 230 tons (fl) **S:** 8 kts **Dim:** 30.0 (25.6 pp) \times 8.0 \times 1.2

M: 2 Caterpillar 3408 TA diesels; 2 props; 1,840 hp

Range: 1,800/8 Man: 11 tot.

REMARKS: C 8 ordered 24-4-81, C 9 and C 10 in 7-82. Cargo: 100 tons vehicles or stores, or 45 tons deck cargo plus 50 tons fresh water (plus 35 tons water ballast). C 9 and C 10 are 33 m o.a.

♦ 1 utility landing craft Bldr: Lewis Offshore, Stornaway, Scotland (In serv. 1979)

C 7 AL NEEMRAN

D: 85 dwt S: 8 kts Dim: 25.5 × 7.4 × 1.8 M: 2 diesels; . . . hp

♦ 1 75-foot Loadmaster-class landing craft Bldr: Cheverton, Cowes, U.K. (In serv. 1-75)

C 4 At SANSOOR

D: 64 tons (130 fl) **S:** 8.75 kts **Dim:** $22.86 \times 6.1 \times 1.07$ (max.) M: 2 diesels; 2 props; 300 hp

REMARKS: Sister Al Doghas (C 5) stricken 1981. The larger Al Dhaibah (C 6) was stricken in 1982; the smaller Sulhafa Al Bahr has also been discarded.

AUXILIARY SHIPS

Bldr: Brooke Marine, Lowestoft, U.K. ♦ 1 training ship

In serv. A 1 AL MABRUKAH (ex-Al Said) 7-4-70 1971



Al Mabrukah (A 1)

Walles Foto, 4-84

D: 785 tons (930 fl) **S:** 17 kts **Dim:** $54.70 \times 10.70 \times 3.05$

A: 1/40-mm AA -2/20-mm AA $(I \times 2)$

Electron Equipt: Radar: 1/Decca TM 1226

EW: . . . intercept, 2 Barricade RL (IX \times 2) M: 2 Paxman Ventura 12YJCM diesels; 2 props; 3,350 hp

Man: 11 officers, 23 men, 37 passengers

REMARKS: Renamed and under conversion from royal yacht to fleet training ship at builders 1-83 to 4-84. Received new accommodations arrangements, communications suit, and armament; the helicopter deck was enlarged.

AUXILIARY SHIPS (continued)

1 supply ship

A 2 AL SULTANA

Bldr In serv. Conoship, Groningen, Netherlands 18-5-75 4-6-75

D: 900 tons (1,380 dwt) S: 11 kts Dim: 65.4 × 10.7 × 4.2

M: 1 Mirrlees-Blackstone diesel; 1,150 hp

Remarks: Traveling crane serves all holds. Replaced in training rôle by Al Mabrukah.

Bldr: Watercraft, U.K. (In serv. 4-81) ♦ 1 inshore survey craft

H 1 AL RAHMANYAI

D: 23.6 tons (fl) **S**: 13.5 kts **Dim**: 15.5 (14.0 pp) \times 4.0 \times 1.25

Electron Equipt: Radar: 1/Decca 101

M: 2 Volvo TMD 120A diesels; 2 props; 520 hp

Electric: 25 kVA Range: 500/12

Remarks: Glass-reinforced plastic construction. Raytheon DE 719B and Kelvin-Hughes MS 48 echo sounders, Decca DMU transponder and Sea Fix receiver, and Hewlitt-Packard 9815A data storage computer fitted.

♦ 1 sail-training craft Bldr: Hard & MacKenzie, Buckie, Scotland (In serv. . . .)

S 1 Shabab Oman (ex-Youth of Oman, ex-Captain Scott)

D: 386 tons S: . . . Dim: 44.0 × 8.5 × 4.6

M: 2 diesels; 1 prop; . . . hp

Man: 5 officers, 15 men + 3 officer/instructors, 24 trainees

Remarks: Three-masted barkentine, purchased 1977 in U.K., for training Omani youth in seamanship.

 10 miscellaneous workboats Bldr: Cheverton, Cowes, U.K.

W 4, 5, 7-11 WF 41-43 (In serv. 4-75)

D: 3.5 tons S: 25 kts Dim: 8.28 × 2.7 × 0.8 M: 2 diesels

ROYAL YACHT SQUADRON

♦ 1 royal yacht Bldr: Dicchiotti, Viareggio, Italy (In serv. 1982)

AL SAID

D: 3,250 tons (fl) S: 18 kts Dim: 106.0 × 17.0 × 5.0 Electron Equipt: 1/Decca TM 1226C, 1/Decca ACS 1230C

M: 2 GMT A420-6 diesels; 2 CP props; 8,400 hp

Man: 16 officers, 140 men

Remarks: Replaced former Al Said (now training ship Al Mabrukah). Not considered to be a naval vessel, unlike her predecessor. Helicopter pad; bow-thruster.

ROYAL OMAN POLICE

AVIATION: Two Pilantus Porter light transports for search-and-rescue duties, delivered 4-84.

 1 P 2000 class Bldr: Watercraft Ltd., Shoreham, U.K.

DHEEB AL BAHAR 1 (In serv. 12-84)



Dheeb Al Bahar

Watercraft, 9-84

D: 80 tons S: 38 kts Dim: 20.80 (18.00 pp) × 5.80 × 1.50

A: 1/20-mm AA -6/7.62-mm mg (I \times 6) Electron Equipt: Radar: 1/Furuno FR-701

M: 2 MTU 12V396 TB93 diesels; 2 props; 3,920 hp (3,260 sust.)

Range: 423/35; 660/22

Remarks: Glass-reinforced plastic construction, with aluminum superstructure. Additional units may be procured.

Bldr: Watercraft Ltd., Shoreham, U.K. (In serv. 9-84) 2 P1200 class

D: 10 tons S: 35 kts Dim: 11.90 (10.16 pp) × 4.08 × 1.06

A: 1/12.7-mm mg -6/7.62-mm mg (I × 6)

Electron Equipt: Radar: 1/. . . nav.

M: 2 M.A.N. diesels; 2 props; 1,100 hp Range: 300/. . . Man: 8 tot.

Remarks: Ordered 7-82. Glass-reinforced plastic construction.

PATROL BOATS AND CRAFT

• 1 . . . class Bldr: . . . (In serv. 1982)

HARAS 9

Haras 8 (In serv. 8-81)

D: 82 tons (fl) **S:** 25 kts **Dim:** $29.9 \times 5.8 \times 1.2$

A: 2/20-mm AA M: 2 MTU 12V396 diesels; 2 props; . . . hp Man: 13 tot.

♦ 1 Type PT 1903 Mk III patrol craft Bldr: Le Comte, Vianen, Netherlands

D: 30 tons (33 fl) S: 30 kts Dim: 19.27 × 4.95 × 1.25

A: 2/12.7-mm mg (I × 2) Range: 1,650/17; 2,300/12

M: 2 MTU 8V331 TC92 diesels; 2 props; 1,770 hp Man: 10 tot.

♦ 2 CG 29 class Bldr: Karlskrona, Sweden

Haras 7 (In serv. 6-81) Haras 10 (In serv. 14-4-82)



Haras 7

P. Voss, 7-81

D: 80 tons (fl) **S**: 25 kts **Dim**: 28.7 × 5.2 × 1.1

A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca 1226C

M: 2 MTU 8V331 IC82 diesels; 2 props; 1,866 hp

Remarks: Aluminum construction, enlarged version of design built for Liberia.

Bldr: Karlskrona, Sweden (In serv. 1980) ♦ 1 CG class

HARAS 6

A: 1/20-mm AA Man: 11 tot. M: 2 MTU 12V331 diesels; 2 props; 2,800 hp

Remarks: Glass-reinforced plastic construction

♦ 5 Haras 1-class fiberglass-hulled Bldr: Vosper, Singapore (In serv. 1-4; 22-12-75; 5: 11-78)

HARAS 1 HARAS 2 HARAS 3 HARAS 4 HARAS 5

D: 53 tons (fl) S: 25 kts Dim: 24.0 × 5.5 × 1.0



Haras 1

D: 45 tons (fl) S: 24.5 kts Dim: 22.9 × 6.0 × 1.5 A: 1/20-mm AA Electron Equipt: Radar: 1/Decca 101

M: 2 Caterpillar D348 diesels; 2 props; 1,840 hp

Range: 600/20; 1,000/11 Man: 11 tot.

Bldr: Watercraft, Shoreham (In serv. 1981) ♦ 2 small patrol craft

ZARA 17 ZARA 18

D: 17.25 tons (fl) S: 22 kts Dim: 13.9 (12.6 wl) × 4.3 × 1.1

M: 2 Cummins VTA-903M diesels; 2 props; 700 hp A: 1/7.62-mm mg Range: 700/20 Man: 6 tot.

OMAN (continued)

PATROL BOATS AND CRAFT (continued)

• 2 landing craft

Bldr: LeComte, Vianen, the Netherlands

ZARA 20 (In serv. 1981)

ZARA 22 (In serv. 1982)

D: 11 tons (23 fl) **S:** 20 kts **Dim:** $18.0 \times 3.0 \times 0.5$ A: 2/7.62-mm mg (I × 2) Range: . . . Man: 4 tot. M: 2 Volvo Penta AQD 70/750 diesel outdrives; 540 hp

Remarks: Zara 20 used as a fueling tender. Zara 22 is 16.0-m o.a.

Note: Also in service are one 19-m and one 18-m tender, delivered by LeComte, Vianen, the Netherlands, in 1988, along with a 16-m craft, and an 8.2-m workboat delivered by Cheverton, Cowes, U.K., in 1983. Two 8.5-m patrol craft, powered by 2/140-hp Evinrude outboards for 40 kts, were delivered in 1985 by Gulf Craft, Ajman, United Arab Emirates.

PAKISTAN

Islamic Republic of Pakistan

Personnel (1985): 1,250 officers, 14,550 men

Merchant Marine (1984): 82 ships - 506,586 grt (tankers: 1 ship - 43,429 grt)

NAVAL AVIATION: The naval arm consists of: 3 Bréguet BR1150 Atlantic Mk 1 patrol aircraft, 6 Sea King helicopters armed with AM-39 anti-ship missiles, 4 Alouette-III helicopters, 2 Cessna liaison aircraft, and 1 Fokker F-27 transport. Plans include possible acquisition of 6 ex-RAAF P-3B Orion patrol aircraft.

SUBMARINES

| ♦ 2 (+2) French Agosta class Bldr: Dubigeon, Nante | | | |
|--|------------------------------|-----------------|-------|
| | ♦ 2 (+2) French Agosta class | Bldr Dubigson N | Janta |

| | Laid down | L | In serv. |
|-------------------------------|-----------|----------|----------|
| S 135 HASHMAT (ex-Astrant) | 15-9-76 | 14-12-77 | 17-2-79 |
| S 136 HURMAT (ex-Adventurous) | | 1-12-78 | 18-2-80 |



Hurmat (S 136)

J.-C. Bellonne, 1980

D: 1,230/1,480/1,725 tons **S:** 12.5/20.5 kts **Dim:** $67.90 \times 6.80 \times 5.40$

A: 4/550-mm TT, fwd (20 torpedoes and Sub-Harpoon SSM)

Electron Equipt: Radar: 1/DRUA-33

Sonar: DUUA-1D, DUUA-2A, DSUV-2H, DUUA-2B, DUUX-2A

EW: ARUR, ARUD

M: 2 SEMT-Pielstick A16 PA4 185 diesels, electric drive (1 3,500-kw motor); 1 prop; 4,600 hp; 1, 23-hp cruise motor

Fuel: 200 tons Range: 7,900/10 (snorkel); 178/3.5 (submerged) Man: 55 tot.

Remarks: Originally ordered for South Africa, but sale canceled in 1977 by arms embargo and completion slowed. Sold to Pakistan in 11-78. Very quiet, highly automated submarines. Diving depth: 300 m. Battery capacity twice that of the Daphné class. Fitted for U.S. Sub-Harpoon anti-ship missiles in 1984-85. Two additional units reported ordered 1983 in Spain, but unconfirmed.

4 French Daphné class

| | Bldr | Laid down | L | In serv. |
|----------------------------|------------------------|-----------|---------|----------|
| S 131 HANGOR | Naval Arsenal, Brest | 1-12-67 | 30-6-69 | 12-1-70 |
| S 132 Shushuk | C. N. Ciotat, Le Trait | 1-12-67 | 30-7-69 | 12-1-70 |
| S 133 Mangro | C. N. Ciotat, Le Trait | 8-7-68 | 7-2-70 | 8-8-70 |
| S 134 GHAZI (ex-Cachalote) | Dubigeon, Normandy | 27-10-66 | 16-2-68 | 25-1-69 |

D: 700 std./869 surf./1,043 sub. tons S: 13.5/16 kts Dim: 57.75 × 6.75 × 4.56 A: 12/550-mm TT (8 fwd, 4 aft), no reloads

Electron Equipt: Radar: DRUA 31

Sonar: DUUA-1 active, DSUV-1 passive

EW: ARUR, ARUD intercept

M: 2 SEMT-Pielstick 12PA4-135 450-kw diesel generator sets; 2 1,300-hp (1,000 sust.) electric motors; 2 props

Range: 4,300/7.5 (snorkel) Man: 5 officers, 45 men

Remarks: S 134 purchased in 12-75 from Portugal. S 131 sank the Indian frigate Khukri in 1971. Diving depth: 300 m.



Ghazi (S 134)

J.-C. Bellonne, 197

♦ 2 SX-404-class midget submarines Bldr: COSMOS, Livorno, Italy

D: 40/70 tons S: 11/6.5 kts Dim: 16.0 × 1.8 × . . .

A: 2/533-mm torpedoes in drop gear or 6-8 mines Range: 1,200/11 surfaced, 60/6.5 submerged Man: 4 tot.

Remarks: Used for the transport of up to twelve raiders. Three discarded in 1982-83. A sixth sank 27-12-76 following an accident at sea. A number of 2-man Chariots from the same builder are also in service.

Note: Former ex-British "Modified Dido"-class cruiser Jahangar (C 85, ex-Babur, ex-HMS Diadem) has been an immobile training hulk and floating AA battery at Karachi since 1982.

DESTROYERS

◆ 1 (+1) ex-U.K. County class Bldr: Swan Hunter & Wigham Richardson, Wallsend-on-Tyne, U.K.

Laid down L In serv. D 84 Babur (ex-London, D 16) 26-2-60 7-12-61 4-11-63



Babur (D 84) - still with Sea Slug launcher

L. & L. Van Ginderen, 6-82

D: 5,440 tons (6,200 fl) S: 32.5 kts (30 sust.)

Dim: 158.55 (153.90 pp) × 16.46 × 6.30 (max.)

A: 4/114-mm Mk 6 DP (II × 2) — 2/Sea Cat GWS 22 systems (IV × 2) — 2/20-mm AA (I × 2) — 1/Alouette-III helicopter (non-ASW)

Electron Equipt: Radar: 1/978, 1/965, 1/992Q, 1/277, 1/903, 2/904 Sonar: 1/177, 1/174, 1/170B, 1/162

EW: UA-8, UA-9, 2/Knebworth/Corvus chaff RL (VIII × 2) M: COSAG: 2 sets A.E.I. GT (15,000 hp each) and 4 G6 gas turbines (7,500 hp

each); 2 props; 60,000 hp

Boilers: 2 Babcock & Wilcox; 43 kg/cm², 510°C superheat Fuel: 600 tons Electric: 3,750 kw Range: 3,500/28 Man: Up to 470 tot.

Remarks: Purchased from U.K. on 22-3-82 and commissioned 22-4-82. Replaced the former Babur as training cruiser. The obsolete Sea Slug Mk 1 missile launcher, with its attendant Type 901 control radar initially remained aboard but inactivated and was removed in 1984. The 114-mm guns are controlled by a single MRS.3 director with Type 903 radar. The GWS 22 Sea Cat system has two directors with Type 904 radars. The portside-opening helicopter hangar is occupied by an Alouette-III helicopter for liaison and SAR duties; thus, despite having an extensive sonar suit, the ship has no ASW ordnance. The massive 80-m-long Sea Slug magazine may be converted into cadet berthing spaces, and the helicopter facility is to be enlarged to handle a Sea King helicopter with SM-39 anti-ship missiles. In 4-84, Pakistan declared an interest in purchasing near-sister HMS Fife, when she is stricken from the Royal Navy.

Bldrs: 165, 166: Federal SB & DD Co., 6 ex-U.S. Gearing class, FRAM-I Newark, N.J.; 167 and 169: Bethlehem, Staten Island; 168: Todd, Seattle; 170: Consolidated Steel

| | Laid down | L | In serv. |
|---|-----------|----------|----------|
| D 165 Tariq (ex-Wiltsie, DD 716) | 13-3-45 | 31-8-45 | 12-1-46 |
| D 166 Taimur (ex-Epperson, DD 719) | 20-6-45 | 29-12-45 | 19-3-49 |
| D 167 TIPPU SULTAN (ex-Damato, DD 871) | 10-5-45 | 21-11-45 | 27-4-46 |
| D 168 Tughril (ex-Henderson, DD 785) | 27-10-44 | 28-5-45 | 4-8-45 |
| D 169 Alamgir (ex-Cone, DD 866) | 30-11-44 | 10-5-45 | 18-8-45 |
| D 170 Shah Jahan (ex-Harold J. Ellison, DD 864) | 3-10-44 | 14-3-45 | 18-12-46 |
| | | | |

D: 2,425 tons (3,460 fl) **S:** 30 kts **Dim:** $119.0 \times 12.45 \times 5.8$ (max.)

A: 4/127-mm DP (II × 2) - 4/20-mm AA (II × 2) - 1/ASROC Mk 116 ASW RL $(VIII \times 1; 17 \text{ missiles}) - 6/324\text{-mm} \text{ Mk } 32 \text{ ASW TT } (III \times 2)$

DESTROYERS (continued)



Tippu Sultan (D 167) - prior to refit

G. Gyssels, 9-81

Electron Equipt: Radar: 1/Decca 1226, 1/SPS-10B, 1/SPS-40, 1/Mk 25 Sonar: SQS-23D

EW: WLR-1, 2/Plessey Shield chaff RL (VI × 2)

M: 2 sets G.E. GT; 2 props; 60,000 hp Electric: 1,300 kw

Boilers: 4 Babcock & Wilcox; 39.8 kg/cm², 454°C Fuel: 600 tons

Remarks: First two sold to Pakistan 29-4-77, then extensively overhauled at Puget Sound Navy Yard, 165 being completed 2-6-78, and 166 on 16-2-78. Second pair transferred 30-9-80. D 169 purchased 1-10-82. D 170 on 1-10-83. All being refitted and modernized to above standard at Karachi. The helicopter facilities are not used. Sonars are being upgraded to solid-state electronics by Raytheon, U.S.

1 ex-British Battle class

Bldr Laid down In serv. D 161 BADR (ex-Gabbard) Swan Hunter 16-3-45 10-12-46 2-2-44



Badr (D 161)

1974

D: 2,325 tons (3,360 fl) S: 31 kts Dim: 115.32 (108.2 pp) × 12.95 × 4.1 A: 4/114-mm DP (II \times 2) -8/40-mm AA (I \times 2, I \times 4) -4/533-mm TT (IV × 1) -1/Mk 4 Squid ASW mortar (III × 1) Electron Equipt: Radar: 1/975, 1/293Q, 1/Marconi SNW-10, 1/275

Sonar: 1/170, 1/174

M: 2 Parsons GT; 2 props; 50,000 hp Boilers: 2 Admiralty, three-drum Fuel: 680 tons Range: 3,200/20 Man: 300 tot.

REMARKS: Transferred 29-2-56. Sister ship Khaibar was sunk during the Indo-Pakistani conflict, 1971. Has one radar director for the 114-mm mounts and 2 STD.1 lead-computing directors for the twin 40-mm AA. Has HFD/F array amidships. To be stricken soon.

FRIGATES

♦ 0 (+3) Modified U.K. Type 21 class

| | Bldr: | Laid down | L | In serv. |
|---------|------------------------------|-----------|---|----------|
| F N | Vosper-Thornycroft, Woolston | | | |
| F., . N | Vosper-Thornycroft, Woolston | | | |
| F N | Karachi NSY | | | |

D: 3,150 tons **S:** . . . **Dim:** $117.04 \times 14.00 \times 4.5$ (mean hull)

A: 4-8 Harpoon SSM (II or IV × 2)-1/VLS Sea Wolf SAM system (24 missiles) - 1/114-mm Mk 8 DP - 1/20-mm Mk 15 CIWS AA - 6/324-mm ASW TT (III × 2) — 1/helicopter

Electron Equipt: Radar: 1/Decca 1226, 1/Type 996 (Plessey AWS-6), 2/Marconi 805SW f.c.

Sonar: Plessey PMS-40 hull-mounted EW: Racal-Decca Cutlass, Racal-Decca RCM, 2 Shield RL

Range: . . . Man: . . .

 $(VI \times 2)$ M: COGOG: . .

REMARKS: Letter of intent signed 1985, but actual contracts not yet let, and Pakistan is still investigating other possibilities, including the Blohm + Voss MEKO concept. The Vosper-Thornycroft design is a broad-beamed version of the Type 21, Amazon class with updated weapons and sensors.

GUIDED-MISSILE PATROL BOATS

• 4 Chinese Huangfen (Soviet Osa-I) class

P. . . N. . . P. . . N. . . P. . . N. . . P. . . N. . .

D: 186.5 tons normal (205 fl) S: 35 kts Dim: 38.75 × 7.60 × 1.70 (mean hull) A: 4/HY-2 (CSS-N-1 Styx) SSM — 4/25-mm AA (II × 2)

Electron Equipt: Radar: 1/Square Tie

M: 3 M503A diesels; 3 props; 12,000 hp Range: 800/30

Electric: 65 kw Man: 28 tot.

Remarks: Arrived at Karachi 27-4-84 as deck cargo.

4 Chinese Hoku class

P 1021 N. P 1022 N. P 1023 N. P 1023 N.



Hoku (P 1024)

French Navy, 12-82

D: 68 tons (79 fl) **S**: 38 kts **Dim**: 27.0 × 6.3 × 1.30 mean (1.8 props) A: 1/HY-2 (CSS-N-1 Styx) SSM (I \times 2)—2/25-mm AA (II \times 1) Electron Equipt: Radar: 1/Pot Head Electric: 65 kw Endurance: 5 days M: 4 M50-F4 diesels; 4 props; 4,800 hp Range: 520/26 Man: 20 tot.

PATROL BOATS

• 4 Hainan class Bldr: People's Republic of China

REMARKS: Transferred: 2 in 11-81 and 2 in 2-82.

P 155 BALUCHISTAN P 159 SIND P 161 SARHAD , P 197 PUNJAB



Baluchistan (P 155)

1978

D: 360 tons (400 fl) S: 30.5 kts Dim: 58.77 × 7.20 × 2.20 (mean hull) A: 4/57-mm AA (II × 2) — 4/25-mm AA (II × 2) — 4/RBU-1200 ASW RL (V × 4) -2/d.c. throwers -2/d.c. racks - mines

Electron Equipt: Radar: 1/Pot Head - Sonar: HF, hull-mounted M: 4 Type 9D diesels; 4 props; 8,800 hp Range: 1,000/10 Man: 60 tot.

Remarks: First pair transferred in 1976, Punjab and Sarhad in 4-80.

Bldr: People's Republic of China • 8 Shanghai-II class

P 140 LAHORE P 145 PISHIN P 149 Bahawalpur P 143 MARDAN P 147 SUKKUR P 159 LARKANA

P 148 SEHWAN P 144 Guilgit D: 122.5 tons normal (134.8 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55 (hull)

A: 4/37-mm AA (II × 2) -4/25-mm AA (II × 2) - mines Electron Equipt: Radar: 1/Pot Head

PATROL BOATS (continued)



Sukkur (P 147)

French Navv. 1980

M: 2 M50-F4, 1,200 hp diesels, 2 12D6, 910 hp diesels; 4 props; 4,220 hp Electric: 39 kw Endurance: 7 days Man: 36 tot. Range: 750/16.5

Remarks: Eight transferred in 1972, four in 1973. Very primitive ships. Sisters *Quetta* (P 141), *Bannu* (P 154), *Kalat* (P 156), and *Sahival* (P 160), officially in reserve since 1982, are no longer operable.

TORPEDO BOATS

• 4 Huchwan-class hydrofoils Bldr: People's Republic of China

HDF 01 HDF 02 HDF 03 HDF 04



HDF 03—note small bow foil out of water below pendant number

1973

D: 39 tons (45 fl) S: 50 kts

Dim: 22.50 × 3.80 (6.26 over foils) × 1.15 (1.12 foilborne)

A: 4/14.5-mm AA (II × 2) - 2/533-mm TT

Electron Equipt: Radar: 1/Skin Head M: 3 M50F diesels; 3 props; 3,600 hp

Range: 500/30 Electric: 5.6 kw Man: 11 tot.

Remarks: Maintained in land storage to prevent corrosion. Cruising speed: 32 kts. Foils forward only; stern planes on surface.

PATROL CRAFT

◆ 2 U.S. patrol craft Bldr: Uniflite, Bellingham, Wash. (In serv. 1983)

D: 10.0 S: 16 kts Dim: 12.19 × . . . × . . .

A: . . . M: 2 G.M. 6-71N diesels; 2 waterjets; 512 hp

 2 U.S. PBR Mk III patrol craft 1983)
 Bldr: Uniflite, Bellingham, Wash. (In serv.

D: 8.9 tons (fl) **S:** 30 kts **Dim:** $9.73 \times 3.53 \times 0.81$ **A:** 3/12.7-mm mg (II \times 1, I \times 1) — 1/60-mm mortar

Electron Equipt: Radar: 1/Raytheon 1900 M: 2 G.M. 6V53T diesels; 2 Jacuzzi waterjets; 550 hp

Range: 150/23 Man: 4 tot.

Remarks: The above four glass-reinforced plastic construction craft were ordered 6-82, apparently for trials and comparison purposes.

♦ 18 MV55 class Bldr: Crestitalia, Ameglia, Italy (In serv. 1979-80)

P 551-568

D: 22.8 tons (fl) S: 30 kts Dim: 16.5 × 5.2 × 0.88 Man: 5 tot. A: 1/14.5-mm mg M: 2 V-6 diesels; 2 props; 1,600 hp Range: 425/25

Remarks: Glass-reinforced plastic construction. P 553 named Vaqar; others presumably also named. These craft are used for Customs duties and are not under naval control in peacetime. Twelve 19.8-m "Swallow"-class patrol craft may be built for similar duties, under license from South Korea.

MINE WARFARE SHIPS

Note: In 4-84 it was announced that 4 minehunters were to be acquired; characteristics and dates not reported.

• 3 ex-U.S. Falcon-class coastal minesweepers

| | Bldr | In serv. |
|----------------------------|-------------------------------------|----------|
| M 160 MAHMOOD (ex-MSC 267) | Quincy Adams Yacht, Quincy, Mass. | 4-57 |
| M 164 MUJAHID (ex-MSC 261) | Hodgdon Bros., East Boothbay, Maine | 10-56 |
| M 165 MUKHTAR (ex-MSC 274) | Bellingham SV. Bellingham, Wash. | 7-59 |



Mukhtar (M 165)

1974

D: 320 tons (372 fl) S: 13 kts (8, sweeping) Dim: 43.0 × 7.95 × 2.55

A: 4/23-mm AA ZSU-23 (IV × 1) Electron Equipt: Radar: 1/Decca 45 Sonar: UQS-1D

M: 2 G.M. 8-268A diesels; 12 props; 1,200 hp Range: 2,500/10 Man: 39 tot.

Remarks: Wooden hulls. All built under the Military Assistance Program. Munsif (M 166, ex-MSC 273) stricken 1979; Murabak (ex-MSC 262) and MSC 289-class units Momin (ex-MSC 293) and Moshal (ex-MSC 294) stricken 1983.

AUXILIARY SHIPS

♦ 1 oceanographic research ship

Bldr Laid down L In serv.
BEHR PAIMA Ishikawajima Harima, Tokyo 16-2-82 . . . 17-12-82

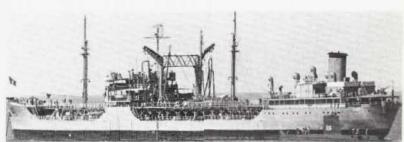
D: . . . S: 13.75 kts Dim: 61.0 × 11.8 × 3.7 M: 2 Daihatsu diesels; 2 props; 2,000 hp

Remarks: Ordered 15-4-81. 1,183 grt.

Note: Ex-U.K. "River"-class frigate Zulfieuar (F 262, ex-Dhanush, ex-U.K. Deveron, used for many years as a hydrographic survey ship, and inshore survey craft Jatli were stricken 1983. Transfer of the ex-U.S. Navy destroyer tender Everglades (AD 24) was not carried out as planned.

 1 ex-U.S. T-2-class replenishment oiler Calif. Bldr: Marinship Corp., Sausalito,

A 41 DACCA (ex-Mission Santa Clara, TAO 132) (In serv. 21-6-44)



Dacca (A 41) - with Hangor (S 131) alongside

1975

D: 5,730 tons light (22,380 fl) S: 15 kts Dim: 159.56 × 20.73 × 9.4
A: 6/40-mm AA (I × 6) Electron Equipt: Radar: 1/RCA CRM-NIA-75
M: 1 set G.E. GT, electric drive; 1 prop; 10,000 hp Electric: 1,150 kw
Boilers: 2 Combustion Engineering "D"; 42 kg/cm², 440°C Fuel: 1,300 tons
Man: 15 officers, 145 men

Remarks: Acquired by U.S. Navy 11-5-47. Loaned 17-1-63, after conversion to permit underway replenishment alongside, one station each side. Bought outright 31-5-74. Cargo: 15,300 tons.

 1 ex-U.S. Cherokee-class ocean tug land, Ore.
 Bldr: Commercial Iron Works, Port-

Laid down L In serv.
A 42 Madadgar (ex-Yuma, ATF 94) 13-2-43 17-7-43 31-8-43

D: 1,325 tons (1,675 fl) S: 16.5 kts Dim: 62.48 (59.44 pp) × 11.73 × 4.67 A: 2/40-mm AA (I×2) — 1/20-mm AA Electron Equipt: Radar: 1/Decca 45 M: 4 G.M. 12-278 diesels, electric drive; 1 prop; 3,000 hp Electric: 260 kw Fuel: 295 tons Man: 85 tot.

REMARKS: Employed as a salvage and rescue tug.

♦ 1 large harbor tug Bldr: Worstd Dutmer, Meppel, Netherlands (L: 29-11-55)

A 43 RUSTOM

D: 530 tons (fl) S: 9.5 kts Dim: 32 0 × 9.1 × 3.3 M: 1 Crossley diesel; 1 prop; 1,000 hp Range: 3,000/8 Man: 21 tot.

♦ 2 small harbor tugs Bldr: Costa; uta-Voltz, Italy (In serv. 9-58)

GAMA (ex-U.S. YTL 754) BHOLU (ex-U S. YTL 755)

REMARKS: Built under the U.S. Offshore P:ocurement Program. 300 hp.

PAKISTAN (continued) AUXILIARY SHIPS (continued)



Madadgar (A 42) - note 20-mm AA before bridge

J.-C. Bellonne, 1977

• 1 small pusher tug

Bldr: Naval DY, Karachi (In serv. 11-1-83)

GOGA

♦ 1 water tanker

Bldr: . . . , Trieste, Italy (In serv. 1957)

A 46 ZUM ZUM

D: 600 tons (1,225 fl) S: 8 kts Dim: 54.0 × 9.8 × 4.6 A: 2/20-mm AA (I × 2) M: 2 diesels; 2 props; 800 hp

• 2 logistics craft Bldr: Le Comte, Vianen, Netherlands (In serv. 18-2-82)

D: 13 tons (fl) S: 21 kts Dim: 18.1 × 3.8 × 0.9

M: 2 Volva Penta AQAD 40 diesels; 2 outdrives; 520 hp

Remarks: Glass-reinforced plastic-hulled landing craft.

◆ 1 degaussing tender Bldr: Karachi DY (In serv. 1979)

D: 260 tons (fl) S: 10 kts Dim: 35.22 (34.0 wl) × 7.00 × 2.4

M: 1 diesel; 1 prop; 375 hp Man: 5 tot.

REMARKS: Built with French technical assistance and very similar in design to French Navy's Y 732. Wooden hull.

♦ 1 floating dry dock Bldr: Karachi DY (In serv. 1981)

N. . . Lift capacity: 2,000 tons

 1 U.S. ARD-2-class floating dry dock serv. 4-43)
 Bldr: Pacific Bridge, Alameda (In

PESHAWAR (ex-ARD 6)

Dim: 148.03 × 21.64 × 1.6 (light) Lift capacity: 3,500 tons

REMARKS: Transferred 6-61.

◆ 1 small floating dry dock (In serv. 1974)

FC II Lift capacity: 1,200 tons

PANAMA

Republic of Panama

Personnel (1985): Approx. 500 tot.

Merchant Marine (1984): 5,499 ships—37,244,233 grt (tankers: 622 ships—10,045,086 grt)

Naval Aviation: There are no "naval" aircraft. The Air Force operates a number of aircraft with a secondary maritime patrol role, including 3 DHC Twin Otter, 3 CASA C-212, 2 Britten-Norman Islander, 2 Cessna U-17, and a Cessna 172. Helicopters include 8 Bell UH-1B, 9 UH-1H, and 4 UH-1N. Larger transports include an L-188 Electra, 4 C-47s, 1 Skyvan, and a Falcon 20 for VIP transport.

NATIONAL GUARD

PATROL BOATS AND CRAFT

• 2 U.S. 65-ft class

Bldr: Swiftships, Morgan City, La. (In serv. 7-82)

GC 16 COMANDANTE TORRIJAS

GC 17 Presidente Porras



Comandante Torrijas (GC 16)

Swiftships, 7-82

D: 35 tons (fl) S: 21 kts Dim: 19.81 × 5.64 × 1.83 A: 1/12.7-mm mg Electron Equipt: Radar: 1/Decca 110 M: 2 G.M. 12V71 TI N75 diesels; 2 props; 1,020 hp

Electric: 40 kw Man: 8 tot. REMARKS: Aluminum construction.

◆ 2 103-foot boats Bldr: Vosper Thornycroft, Portsmouth, U.K. (In serv. 3-71)

GC 10 PANQUIACO (L: 22-7-70) GC 11 LIGIA ELENA (L: 25-8-70)

D: 96 tons (123 fl) S: 24 kts Dim: 31.25 × 6.02 × 1.98

A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca 916

M: 2 Paxman Ventura 12-YJCM diesels; 2 props; 2,800 hp Electric: 80 kVA Man: 23 tot.

• 2 ex-U.S. Coast Guard 40-foot Mk 1-class utility boats (In serv. 1950)

GC 14 MARTI GC 15 JUPITER

D: 13 tons (fl) S: 18 kts Dim: 12.3 × 3.4 × 1.0

A: 1/12.7-mm mg M: 2 G.M. 6-71 diesels; 2 props; 300 hp

Range: 160/8 Man: 4 tot.

Remarks: Transferred in 1962.

• 2 ex-U.S. 63-foot AVR class

GC 12 Ayanası GC 13 Zartı

D: 35 tons (fl) S: 22.5 kts Dim: 19.3 × 4.7 × 1.0

A: 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 1/Raytheon 1500B

M: 2 G.M. 8V-71 diesels; 2 props; 900 hp Man: 8 tot.

Remarks: In service in 1943 and transferred 1965-66.

AUXILIARY SHIPS AND CRAFT

• 1 ex-U.S. LSMR-class rocket-assault ship Bldr: E

Bldr: Brown SB Co., Houston

GC 10 Tiburon (ex-Smokey Hill River, LSMR 531)

Laid down L In serv.
2-6-45 7-7-45 21-9-45

D: 2,084 tons (fl) **S:** 12 kts **Dim:** $62.87 \times 10.52 \times 2.18$ **A:** None **M:** 2 G.M. 16-278A diesels; 2 props; 2,800 hp

Electric: 440 kw Man: . . .

Remarks: Purchased from a commercial source 14-3-75 and used for logistics-support duties. May have had bow doors added, although as completed she had none and had her well deck plated over. Cargo: approximately 400 tons.

◆ 2 logistics-support landing craft Bldr: Ch. de la Manche, France (In serv. 1978)

GN. . . GN. . .

D: 60 tons (fl) S: 9 kts Dim: 12.6 × . . . × . . . M: 2 SKL 8NVD26 diesels; 2 props; 400 hp

REMARKS: Not BATRAL-class landing ships, as recorded elsewhere.

• 3 ex-U.S. Army LCM (8)-class landing craft

GN 1 GN 2 GN 3

D: 115 tons (fl) S: 9 kts Dim: 22.7 × 6.4 × 1.4

A: None M: 4 G.M. 6-71 diesels; 2 props; 600 hp Man: 6 tot.

Remarks: Transferred 1972. Used for logistics-support duties. Two-level superstructure added aft.

PANAMA (continued)

AUXILIARY SHIPS AND CRAFT (continued)

♦ 1 ex-U.S. YF-852-class cargo lighter

Laid down In serv. N. . . (ex-YF 886) Defoe SB, Bay City, Michigan 13-4-45 25-5-45 4-8-45

D: 590 tons (fl) S: 11 kts Dim: 40.23 × 9.1 × 2.7 M: 2 G.M. 6-71 diesels; 2 props; 600 hp Man: 11 tot.

Remarks: Transferred 5-75. Cargo: 250 tons.

♦ 1 former shrimp boat, used for logistics support

S: 11 kts Capacity: 150 passengers

PAPUA NEW GUINEA

Personnel (1985): 410 total

Merchant Marine (1984): 82 ships - 25,760 grt

(tankers: 6 ships - 2,797 grt)

NAVAL AVIATION: The Papua New Guinea Defense Force operates 6 Nomad N.22B light transports, 6 C-47, 1 Super King Air 200, and 1 Gulfstream II transports for coastal patrol and logistics duties.

PATROL BOATS

◆ 0 (+4) ASI 315 design Bldr: Australian SB Ind. (WA), Pty, Ltd., South Coogie, W. Australia

In serv. In serv. 1986 P. . . N. . . P. . . N. . . P. . . N. . . P. . . N. . .



ASI 315 design - artist's rendering

Australian SB Ind., 1985

D: 165 tons (fl) S: 20 kts (sust.) Dim: 31.50 (28.60 wl) × 8.10 × 2.12

A: 1/20-mm AA — 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 1/Furuno 1011

M: 2 Caterpillar 3516 diesels; 2 props; 2,400 hp (sust.) Range: 2,500/12 Fuel: 33 tons Electric: 120 kw Endurance: 10 days Man: 3 officers, 14 men

Remarks: "Pacific Patrol Boat" design winner, for Australian foreign aid program; others building for smaller island nations. Ordered late 1985.

4 ex-Australian Attack class

| Bldr | In serv. |
|----------------------------|--|
| Evans Deakin, Queensland | 1-3-68 |
| Walkers, Ltd., Maryborough | 21-10-68 |
| Evans Deakin, Queensland | 3-4-68 |
| Evans Deakin, Queensland | 28-11-68 |
| | Evans Deakin, Queensland Walkers, Ltd., Maryborough Evans Deakin, Queensland |

D: 146 tons (fl) S: 21-24 kts Dim: 32.76 (30.48 pp) × 6.2 × 1.9

A: 1/40-mm AA -2/7.62-mm mg (I \times 2) Electron Equipt: Radar: 1/Decca RM916



Samarai (P 85)

R. Gillett, 1983

M: 2 Davey-Paxman Ventura 16-YJCM diesels; 3,500 hp Fuel: 20 tons Range: 1,220/13 Man: 18 tot.

Remarks: Transferred in 1975. Aitape (P 84) stricken 1981 for spares.

AMPHIBIOUS WARFARE SHIPS

• 4 Burfoam-class utility landing craft Bldr: Sing Koon Seng SY, Singapore

In serv. BURFOAM 21-7-81 BURSEA 6-4-82 18-5-82 BURCREST 8-9-81 BURWAVE

D: 200 tons light (725 fl) S: 9 kts Dim: 37.25 (33.50 pp) × 9.00 × . . . M: 2 Deutz SBA-6M-816-1 LKR diesels; 2 props; 626 hp

Range: 1,870/9 Fuel: 160 tons Man: 18 tot.

Remarks: 260 grt/350 dwt. Owned by government, employed in commercial and logis-

 2 ex-Australian Balikpapan-class utility landing craft Bldr: Walkers, Maryborough

31 SALAMAUA 32 Buna



Salamaua (31)

G. Gyssels, 1980

D: 310 tons (503 fl) S: 8 kts Dim: 44.5 × 12.2 × 1.9 A: 2/12.7-mm mg (I × 2) M: 3 G.M. 12V71 diesels; 3 props; 675 hp Range: 1,300-2,280/10 depending on load Man: 2 officers, 11 men

Remarks: In service in 1972 and transferred 1975. Cargo: 140-180 tons.

 7 Kokuba-class personnel landing craft Bldr: Australia (In serv. 1975)

Кокива KUTUBA KIAIPIT KANDEP KUNIAWA KIUNGA KUKIPI

D: 12 tons (fl) S: 9 kts Dim: 12.0 × 4.0 × 1.0 M: 2 Gardner diesels; 2 props; 150 hp

♦ 1 ex-Australian tug

Bldr: Perrin, Brisbane, 1972

D: 47.5 tons S: 9 kts Dim: 15.4 × 4.6 × . .

M: 2 G.M. diesels; 2 props; 340 hp Range: 710/9 Man: 3 tot.

Remarks: Transferred in 1974. Retained RAN number.

PARAGUAY

Republic of Paraguay

Personnel (1985): 2,500 total, including 500 Marines and Coast Guard

Merchant Marine (1984): 39 ships - 37,799 grt

(tankers: 4 ships - 3326 grt)

NAVAL AVIATION: 4 H-13 Sioux helicopters, 2 AT-6 Texan trainers, 3 Cessna U-206, 1 Cessna 150M light utility aircraft, and 1 C-47 transport.

PARAGUAY (continued)

RIVER GUNBOATS

◆ 1 Brazilian Roraima class Bldr: Ars. de Rio de Janeiro, Brazil-

Laid down L In serv.
P. 2 ITAIPU 3-3-83 16-3-84 2-4-85

D: 220 tons light (384 ft) S: 14.5 kts Dim: 46.3 (45.0 pp) × 8.45 × 1.42 (max)

A: 1/40-mm -6/12.7-mm mg (II \times 3) -2/81-mm mortar (I \times 1)

Electron Equipt: Radar: 3/navigational Range: 4,500/11

M: 2 M.A.N. V6V 16/18 TL diesels; 2 props; 1,824 hp

Endurance: 30 days Man: 63 tot.

Remarks: Order announced 11-4-83. Has small helicopter deck.

• 3 ex-Argentinian Bouchard-class former ocean minesweepers

| M. 1 Nanawa (ex-Bouchard) | Bldr Rio Santiago NY | 20-3-36 | In serv. 16-5-37 |
|-------------------------------|-----------------------------------|---------|---------------------|
| M. 2 Capitán Meza (ex-Seaver) | Hansen & Puccini, San Fernando | 2-5-37 | 20-5-39 |
| M. 3 TENIENTE FARINA (ex-Py) | Rio Santiago NY | 31-3-38 | 1-7-38 |

D: 450 tons (650 fl) S: 16 kts Dim: 59.5 × 7.3 × 2.6

A: 4/40-mm AA (II × 2) -2/12.7-mm mg - mines

M: 2 M.A.N. diesels; 2 props; 2,000 hp Range: 3,000/12 Man: 70 tot.

REMARKS: Transferred: M. 1 donated 1-64, the other two purchased on 6-3-68.

♦ 2 Paraguay class Bldr: Odero, Genoa (In serv. 5-31)

C. 1 Paraguay (ex-Comodoro Meya) C. 2 Humaitá (ex-Capitán Cabral)



Humaita (C.2) - in floating dry dock DF.1

1970

D: 636 tons, 745 avg. (865 fl) S: 17.5 kts Dim: $70.15 \times 10.7 \times 1.65$ A: 4/120-mm (II \times 2) -3/76.2-mm AA (I \times 3) -2/40-mm AA (I \times 2) -6 mines M: 2 sets Parsons GT; 2 props; 3,800 hp Boilers: 2 Fuel: 170 tons Range: 1,700/16 Man: 86 tot.

◆ 1 old former tug Bldr: Werf Conrad, Haarlem (In serv. 1908)

A. 1 Capitán Cabral (ex-Adolfo Riquelme)

D: 206 tons (fl) S: 9 kts Dim: 30.5 × 7.0 × 2.9

A: 1/76.2-mm - 2/37-mm M: Reciprocating; 300 hp Man: 47 tot.

REMARKS: Wooden hull, used for riverine patrol on the Upper Paraña River.

PATROL CRAFT

♦ 6 small craft Bldr: Sewart Seacraft, Berwick, La.

PT. 101 PT. 102 PT. 103 PT. 104 PT. 105 PT. 106

D: 15 tons (fl) S: 20 kts Dim: 13.1 × 3.9 × 0.9

A: 2/12.7-mm mg M: 2 G.M. G-71 diesels; 2 props; 500 hp Man: 7 tot.

Remarks: PT. 101 and PT. 102 in service in 12-67; PT. 103, PT. 104, and PT. 105, in 9-70; and PT. 106, in 3-71.

AUXILIARY SHIPS

♦ 1 repair/headquarters ship Bldr: Brown SB, Houston

BC. 1 Boqueron (ex-Teniente Pratt Gil, PH. 1, 22-8-44 15-9-44 13-10-44

D: 743 tons (1,095 fl) S: 12.6 kts Dim: 61.88 × 10.51 × 2.54

A: 2/40-mm AA (II × 1)

ex-Corrientes, ex-LSM 86)

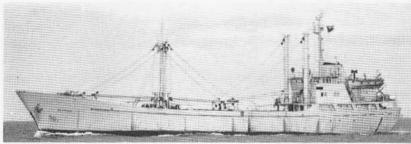
M: 2 Fairbanks-Morse 38D81/8 × 10 diesels; 2 props; 2,800 hp

Electric: 240 kw Man: . . .

REMARKS: An ex-U.S. LSM-1-class landing ship donated by Argentina on 13-1-72, after conversion to a command and repair ship. Well deck plated over to create a helicopter deck aft; superstructure enlarged and moved to the centerline. Renamed 1980.

 1 cargo and training ship serv. 2-68)
 Bldr: Thomás Ruiz de Velasco, Bilbao, Spain (In

GUARANI



Guarani

L. & L. Van Ginderen, 10-83

D: 714 grt/1,047 dwt **S:** 12.2 kts **Dim:** $73.6 \times 11.9 \times 3.7$ **M:** 1 diesel; 1 prop; 1,300 hp

Remarks: Purchased and repaired after a fire in 1974 to provide seagoing experience for naval cadets and to engage in commercial voyages to raise revenue for running the navy. Cargo: approximately 1,000 tons.

♦ 2 ex-U.S. LCU-501-class landing craft (In serv. circa 1944-45)

BT. 1 (ex-YFB 82, ex-LCU. . .) BT. 2 (ex-YFB 86, ex-LCU. . .)

D: 143 tons (309 fl) S: 10 kts Dim: 36.3 × 9.8 × 1.2 (aft)

M: 3 Gray Marine 64YTL diesels; 3 props; 675 hp

Remarks: Transferred in 6-70. Used for logistics duties. Cargo: 125 tons.

♦ 2 ex-U.S. 64-foot YTL-422-class tugs

| | Bldr | Laid down | L | In serv. |
|-------------------|--------------------|-----------|---------|----------|
| R. 5 (ex-YTL 211) | Robert Jacob, Inc. | 26-12-41 | 20-6-42 | 21-8-42 |
| R. 6 (ex-YTL 567) | Gunderson Bros. | 5-3-45 | 17-8-45 | 30-10-45 |

D: 84 tons S: 9 kts Dim: 20.2 × 5.5 × 2.4

M: 1 diesel; 300 hp Man: 5 tot.

REMARKS: Transferred in 3-67 and 4-74.

◆ 1 ex-U.S. floating dry dock Bldr: Doullut & Ewin, Mobile, Ala. (In serv. 6-44)

N. . . (ex-AFDL 26)

Dim: $60.96 \times 19.5 \times 1.04$ (light) Lifting capacity: 1,000 tons

REMARKS: Transferred in 3-65.

• 1 ex-U.S. floating workshop

| | Bldr | Laid down | L | In serv. |
|------------------|--------------------------------------|---------------|-----------|----------|
| N (ex-YR 37) | Mare Island Naval SY | 14-12-41 | 12-1-42 | 15-5-42 |
| D: 600 tons (fl) | Dim: $45.72 \times 10.36 \times 1.8$ | Electric: 210 | 0 kw Man: | 47 tot. |

REMARKS: Transferred 3-65.

• 3 dredges

D. 1 N. (In serv. 1907) — 140 tons, 30 crew
D. 2 TENIENTE O. CARRERAS SAGUIER (In serv. 1957) — 110 tons, 19 crew
RP. 1 N. (In serv. 1908) — 107 tons, 29 crew

Note: Also believed in service are river transport *Presidente Stroessner* (T. 1, 150 tons, 10 kts, In serv. 1901), a 50-ton survey launch, buoy tender B. 1 (30-tons), and several small stores carriers.

PERU

Republic of Peru

Personnel (1985): 2,100 officers, 19,000 men, plus 2,500 officers and men of the Naval Infantry

Merchant Marine (1984): 670 ships — 787,746 grt (tankers: 16 ships — 167,541 grt)

Naval Aviation: The air arm consists of the following helicopters and fixed-wing aircraft: 9 AM 39 Exocet SSM-equipped SH-3D Sea King, 6 Agusta-Bell AB 212, 10 Bell 206 JetRanger, 6 Bell UH-1, and 2 Alouette-III helicopters; 2 Fokker F-27 Maritime, 9 Grumman S-2 Tracker ASW aircraft, 2 DHC-6 Twin Otter floatplanes, 2 C-47 transports, 1 Piper Aztec liaison aircraft, and 6 Beech T-34C trainers.

WARSHIPS IN SERVICE AND UNDER CONSTRUCTION As Of 1 January 1986

| | L | Tons (surfaced) | Main armament |
|--------------------|-----------|--------------------|--|
| ♦ 12 submarines | | | |
| 6 Type 209 | 1973-1981 | 980-1,000 | 8/533-mm TT |
| 4 Dos De Mayo | 1953-57 | 825 | 6/533-mm TT, 1/127-mm DP (on two units) |
| 2 GUPPY-IA | 1944 | 1,830 | 10/533-mm TT |
| • 2 cruisers | | (Std) | |
| 1 Aguirre | 1950 | 9,850 | 4/152-mm DP, 6/57-mm AA, 4/40- mm AA, 3 helicopters |
| 1 Almirante Grau | 1944 | 9,529 | 8/152-mm DP, 8/57-mm AA |
| • 6 destroyers | | | |
| 6 FRIESLAND | 1954-56 | 2,496 | 4/20-mm DP, 4/40-mm AA |
| ♦ 3 (+1) frigates | | | Page 1 |
| 3 (+1) Lupo | 1976-83 | 2,208 | 8/Otomat, 1/Albatros SAM system, 1/127-mm DP |
| • 6 guided-missile | corvettes | | |
| 6 PR 72 | 1978-79 | 560 | 4/MM 38 Exocet, 1/76-mm DP, 2/40-mm AA |

SUBMARINES

| ♦ 6 German Type 209 | | Bldr: Howa | ıldtswerke, Kiel | | |
|---------------------|----------|------------|-------------------|----------|----------|
| | L | In serv. | | L | In serv. |
| S 31 CASMA | 31-8-79 | 19-12-80 | S 34 CHIPANA (ex- | 7-8-81 | 12-7-83 |
| S 32 Antofagasta | 19-12-79 | 14-3-80 | Pisagua | | |
| S 33 Pisagua (ex- | 19-5-81 | 8-4-82 | S 35 ISLAY | 11-10-73 | 23-1-75 |
| Blume) | | | S 36 Arica | 5-4-74 | 4-4-75 |



Pisagua (S 33) - bulged sonar bow

Skyfotos, 9-83



Islay (P 35) - low bow

L. & L. Van Ginderen, 9-83

D: 980/1,230 tons S: 21 kts for 5 minutes, submerged, 12 snorkel, 11 surf. Dim: 54.40 × 6.20 × 5.50 A: 8/533-mm TT—(14 total SST-4 and NT37C

4 MTU Type 12V493 TY60 diesels, each linked to a 450-kw AEG generator, 1 Siemans electric motor; 1 prop; 5,000 hp Range: 230/8; 400/4 (sub.) Endurance: 40 days

Fuel: 63 tons Man: 5 officers, 26 men

REMARKS: S 31 and S 32 were ordered 12-8-76, and two more in 3-77. S 31 and later are 56.1-m overall, 1,185 tons surfaced/1,290 tons submerged. Use H.S.A. SINBADS f.c.s. S 33 delivery delayed by collision 2-4-82. S 35 and S 36 have DUUX-2CN sonar equipment.

| 4 Dos de Mayo class | Bldr: General | Dynamics, C | roton, Conn |
|---|----------------------|-------------|---------------------|
| S 41 Dos De Mayo (ex-Lobo) | Laid down 12-5-52 | L 6-2-54 | In serv. 14-6-54 |
| S 42 ABTAO (ex-Tiburon) | 12-5-52 | 27-10-53 | 20-2-54 |
| S 43 Angamos (ex-Atun) | 27-10-55 | 5-2-57 | 1-7-57 |
| S 44 IQUIQUE (ex-Merlin) | 27-10-55 | 5-2-57 | 1-10-57 |



Angamos (S 43) - now has bow sonar dome

D: 825/1,400 tons **S:** 16/10 kts **Dim:** 74.1 \times 6.7 \times 4.2 **A:** S 41, S 42: 1/127-mm DP—all: 6/533-mm TT (4 fwd, 2 aft) Electron Equipt: Radar: 1/SS-2A - Sonar: BQR-3, BQA-1A M: 2 G.M. 12-278A diesels, 2 electric motors; 2 props; 2,400 hp Fuel: 45 tons Range: 5,000/10 (snorkel) Man: 40 tot.

Remarks: Patterned after the U.S. Marlin class of 1941. These were the last U.S. submarines to be built for a foreign customer. S 41 and S 42 were refitted in 1965, S 43 and S 44 in 1968. The 127-mm gun carried by S 41 and S 42 is a 25-caliber U.S. "Wet" model and is mounted abaft the sail.

* 2 ex-U.S. GUPPY-IA class

Bldr: Portsmouth Naval SY, New Hampshire

Laid down S 49 Pedrera (ex-Sea Poacher, SS 406) 20-5-44 23-2-44 31-7-44 S 50 Pacocha (ex-Atule, SS 403) 2-12-43 6-3-44 21-6-44



Peruvian submarines in silhouette - from background to foreground: Dos de Mayo or Abtao (S 41 or 42) with deck gun and bow dome; a GUPPY-1A; and a Type 209 U.S. Navy, 1982

D: 1,830/2,440 tons **S:** 17/15 kts **Dim:** $93.57 \times 8.23 \times 5.18$

A: 10/533-mm TT (6 fwd, 4 aft)

Electron Equipt: Radar: 1/SS-2A - Sonar: BQS-4, BQR-2B

M: 4 Fairbanks-Morse 38D81/4 diesels, 2 electric motors; 2 props; 4,610 hp

Fuel: 330 tons Range: 10,000/10 Man: 82 tot.

Remarks: Purchased in 7-74. Both were converted to GUPPY-IA configuration during 1951. They can maintain 15 kts for half an hour while submerged, 3 kts for thirty-six hours. Snorkel speed is 7.5 kts. A third submarine of this class, ex-Tench (SS-417), was towed out in 11-76 for cannibalization.

CRUISERS

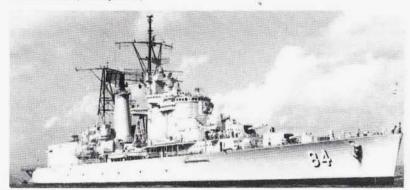
♦ 1 ex-Dutch guided-missile cruiser terdam

Bldr: Rotterdamse Droogdok Mij. Rot-

84 AGUIRRE (ex-De Zeven Provincien,

ex-Eendracht, ex-Kijkduin)

Laid down In serv. 19-5-39 22-8-50 17-12-53



Aguirre (84)

1978

D: 9,850 tons (12,250 fl) **S**: 32 kts **Dim**: 185.7 (182.4 pp) \times 17.25 \times 6.7 A: 4/152-mm DP (II \times 2) -6/57-mm AA (II \times 3) -4/40-mm AA (I \times 4) -2/d.c.racks (8 d.c.) - 3 SH-3D Sea King helicopters

Electron Equipt: Radar: 2/Decca. . . , 1/LW-02, 1/SGR-103, 1/DA-02, 1/ZW-03, 1/M 25, 2/M 45

Sonar: CWC-10N

M: 2 sets Parsons GT; 2 props; 79,000 hp Boilers: 4 Yarrow-Werkspoor,

Armor: Belt: 76-102-mm; decks (2): 20-25-mm

Electric: 4,000 kw Range: 6,000/17 Man: 856 tot.

CRUISERS (continued)

Remarks: Purchased in 8-76. The Terrier missile system was replaced by a hangar (20.4 × 16.5) and a helicopter platform (35.0 × 17.0) at Rotterdam. Recommissioned on 31-10-77. The helicopters carry French AM 39 Exocet anti-ship missiles. The hangar roof is also a helicopter platform. Carries 1,620 rounds 152-mm, 6,400 rds 57-mm, 8,000 rds 40-mm ammunition.

• 1 ex-Dutch cruiser

Bldr: Wilton-Fijenoord, Schiedam

81 Almirante Grau (ex-de Ruyter, 5-9-39 24-12-44 18-11-53 ex-de Zeven Provincien)



Almirante Grau (81)

L. & L. Van Ginderen, 3-85



Almirante Grau (81)

L. & L. Van Ginderen, 3-85

D: 9,529 tons (11,850 fl) S: 32 kts Dim: 187.32 (182.4 pp) × 17.25 × 6.7 A: 8/152-mm DP (II × 4) -6/40-mm AA (I × 6) -2/d.c. racks (12 d.c.) Electron Equipt: Radar: 1/Decca. . . , 1/LW-01, 1/LW-02, 1/SGR-105, 1/SGR-103, 1/SGR-104, 2/M 45, 4/M 44

Sonar: CWC-10N—EW:

M: 2 sets Parsons GT; 2 props; 85,000 hp Boilers: 4 Yarrow-Werkspoor, three-drum

Remarks: Purchased 7-3-73, commissioning 23-5-73. Refitting at Amsterdamse Droogdok Maatschappij 26-3-85 to 1987; delayed by shippyard bankruptcy. Four twin Bofors 57-mm AA removed prior to arrival in Netherlands, navigational radar added atop foremast. Receiving new H.S.A. radars and fire-control systems. Carries 3,250 rds, 152-mm, 16,000 rds 40-mm ammunition. A 100-mm flare rocket launcher with 100 rds is mounted on the fantail.

DESTROYERS

• 6 ex-Dutch Friesland class

| | Bldr | Laid down | L | In serv. |
|---|-------------------------------------|-----------|---------|----------|
| 70 COLONEL BOLOGNESI (ex- Overijssel, D 815) | Wilton-Fijenoord, Schiedam | 15-10-53 | 8-7-56 | 4-10-57 |
| 71 Castilla (ex-Utrecht, D 817) | Kon. Mij. De Schelde, Vlissingen | 15-2-54 | 2-6-56 | 1-10-57 |
| 76 Capitán Quiñones ex-Limburg, D 814) | Kon. Mij. De Schelde, Vlissingen | 28-11-53 | 5-9-55 | 31-10-56 |
| 77 VILLAR ex-Amsterdam, D 819) | Nederlandse Dok, Amsterdam | 26-3-55 | 25-8-56 | 10-8-58 |
| 78 Galvez ex-Groningen, D 813) | Nederlandse Dok, Amsterdam | 4-2-52 | 9-1-54 | 19-9-56 |
| 79 DIEZ CANSECO ex-Rotterdam, D 818) | Rotterdamse DDM, Rotterdam | 7-4-54 | 26-1-56 | 28-2-57 |



Colonel Bolognesi (70)

L. & L. Van Ginderen, 7-82

D: 2,496 tons (3,100 fl) S: 36 kts Dim: 116.0 (112.8 pp) \times 11.77 \times 5.2 A: 4/120-mm DP (II \times 2) — 4/40-mm AA (I \times 4) — 2/375-mm Bofors ASW RL (IV \times 2) — 1/d.c. rack (8 d.c.)

Electron Equipt: Radar: 1/Decca 1229, 1/LW-02, 1/DA-01, 1/ZW-06, 1/M 45 Sonar: 1/CWE-10N, 1/PAE 1N

M: 2 sets G.E. GT; 2 props; 60,000 hp

Boilers: 4 Babcock & Wilcox; 39.8 kg/cm², 454°C Electric: 1,350 kw Range: 920/36; 3,300/22; 4,000/15 Man: 284 tot.

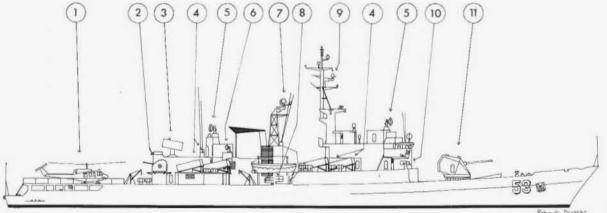
Remarks: 77 transferred 19-5-80; 76 transferred 27-6-80; 78 purchased 27-8-80 and transferred 2-2-81; 79 transferred 11-7-81; 70 purchased 14-6-82. Two forward 40-mm AA removed 1965, fire control for remaining 40-mm AA removed 1977-78. Same propulsion plant as U.S. Gearing class. Have one 103-mm rocket flare launcher with 100 rds. Carry 1,300 rds 120-mm, 4,300 rds 40-mm, and 98 rds 375-mm ASW ammunition. Plans have been prepared to modernize two of these ships with new weapons and sensors, including Exocet missiles, in the Netherlands, beginning in 1987. Sister Guise (72, ex-Drenthe, D 816) purchased 11-7-81, stricken 8-85.

Note: Ex-British Daring-class destroyers Palacios (ex-Diana) and Ferré (ex-Decoy) were put up for sale late in 1984. Ex-Netherlands Holland-class destroyer Garcia y Garcia (75, ex-Holland) was decommissioned for eventual disposal during 1985.

GUIDED-MISSILE FRIGATES

• 3 (+1) Italian Lupo type

| | Bldrs | Laid down | L | In serv. | |
|-------------------------|-------------------|-----------|----------|----------|--|
| 51 MELITON CARVAJAL | CNR, Riva Trigoso | 8-10-74 | 17-11-76 | 5-2-79 | |
| 52 Manuel Villavicencio | CNR, Riva Trigoso | 6-10-76 | 7-2-78 | 25-6-79 | |
| 53 Montero | CNTR, Callao | 1977 | 8-10-82 | 25-7-84 | |
| 54 Mariategui | CNTR, Callao | 1977 | 8-10-84 | 1986 | |



Montero 1. AB 212 helicopter 2. 40-mm Dardo AA mounts (II × 2) abreast fixed hangar 3. Albatros launcher for Aspide missiles (VIII × 1) 4. Otomat anti-ship missiles 5. RTN-30X/RTN-10X missile and gun f.c. radars 6. RTN-20X radar f.c.s. for 40-mm Dardo system 7. RAN-10S search radar 8. ILAS-3 ASW TT (III × 2) 9. RAN-11 L/X radar 10. Breda SCLAR multi-purpose rocket launchers (XX × 2) 11. OTO Melara 127-mm/54-cal, gun



Meliton Carvajal (51)

U.S. Navy, 1984



Montero (53)

U.S. Navy, 1984

D: 2,208 tons (2,500 ft) S: 32 kts Dim: 108.4 (106.0 pp) \times 11.28 \times 3.66 A: 8/Otomat Mk 2 (I \times 8) — 1/127-mm OTO Melara DP — 1/Albatros SAM system (VIII \times 1) — 4/40-mm Breda Dardo AA (II \times 2) — 6/324-mm Mk 32 ASW TT (III \times 2) — 1/AB-212 ASW helicopter

Electron Equipt: Radar: 1/3RM20, 1/RAN-10S air search, 1/RAN-11LX surface search, 1/RTN-10X, 2/RTN-20X, 1/RTN-30X Sonar: Edo 610E

EW: passive intercept, 2/SCLAR chaff RL (XX × 2)

M: CODOG: 2 Fiat-G.E. LM-2500 gas turbines, 25,000 hp each; 2 GMT A230-20M diesels, 3,900 hp each; 2 CP props

Electric: 3,120 kw Range: 900/35; 3,450/20.5 (diesel)

Man: 20 officers, 165 men

Remarks: Italian technicians assisted in the building of Nos. 53 and 54 at Callao. Differ from the Italian Navy's version in having a fixed (vice telescoping) hangar and a step down to the hull at the stern; the Dardo 40-mm mounts are one deck higher, and the SAM fire-control system differs. Selenia IPN-IC data system fitted. There are no reloads for the Albatros system, which uses Aspide missiles. The helicopter provides over-the-horizon targetting and mid-course guidance for the Otomat missiles.

GUIDED-MISSILE CORVETTES

• 6 French PR-72-560 class

| | Bldr | L | In serv. |
|-----------------------|------------|---------|----------|
| P 101 VELARDE | Lorient DY | 16-9-78 | 25-7-80 |
| P 102 SANTILLANA | SFCN | 11-9-79 | 25-7-80 |
| P 103 DE Los Heroes | Lorient DY | 20-5-79 | 17-11-80 |
| P 104 HERRERA | SFCN | 16-2-79 | 26-2-81 |
| P 105 LARREA | Lorient DY | 20-5-79 | 16-6-81 |
| P 106 Sanchez Carrion | SFCN | 28-6-79 | 14-9-81 |



Herrera (P 104) - old number

SFCN, 1981

D: 470 tons light (560 normal, 610 fl) S: 37 kts (34 sust.)

Dim: 64.0 (59.0 pp) × 8.35 × 2.6

A: 4/MM 38 Exocet SSM (II × 2) — 1/76-mm OTO Melara DP — 2/40-mm Breda-Bofors AA (II × 1) Electron Equipt: Radar: 1/Decca 1226, 1/Thomson-CSF THD 1040 Triton, 1/Castor III fire control

M: 4 SACM AGO 240, V-16 diesels; 4 props; 22,000 hp Electric: 560 kw Range: 1,200/30; 2,500/16 Man: 36 tot.

Remarks: These ships, designed by SFCN Villeneuve-la-Garonne, have been given the names of the Vosper patrol boats that were transferred to the Coast Guard. Vega weapons control system, with backup optical gun director.

RIVER GUNBOATS

1 Marañon class Bldr: John I. Thornycroft, Woolston, U.K.

| | Laid down | L | In serv. |
|------------|-----------|---------|----------|
| 13 Marañon | 4-50 | 23-4-51 | 7-51 |
| 14 UCAYALI | 4-50 | 7-3-51 | 7-51 |



Marañon (13)

1975

D: 350 tons (365 fl) S: 12 kts Dim: 47.22 × 9.75 × 1.22

A: 2/76.2-mm DP (I × 2) -4/20-mm (II × 2) Man: 4 officers, 36 men

M: 2 British Polar 441 diesels; 2 props; 800 hp Range: 5,000/10

Remarks: Based at Iquitos and in service on the Upper Amazon. Superstructure of aluminum alloy.

 1 ex-U.S. Cannon-class former frigate Bldr: Western Pipe & Steel Co., San Pedro, Cal.

Laid down L In serv.
61 Castilla (ex-Bangust, DE 739) 11-2-43 6-6-43 30-10-43

D: 1,240 tons (1,900 fl) S: 21 kts (new) Dim: 93.27 (91.44 wl) × 11.15 × 3.56 (mean)

A: 3/76.2-mm Mk 26 DP (I \times 3) — 6/40-mm AA (II \times 4) — 10/20-mm AA (I \times 10) Electron Equipt: Radar: 1/navigational

M: 2 G.M. 16-278A diesel generator sets, electric drive; 2 props; 6,000 hp

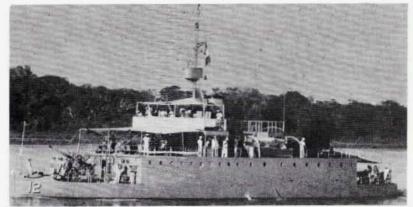
Electric: 680 kw Fuel: 315 tons Range: 8,300/14

Man: 12 officers, 160 men

Remarks: Purchased 2/52. Employed at Iquitos on the Upper Amazon as headquarters and training ship for the Amazon Flotilla. ASW equipment and gunfire-control equipment deleted. Portholes added to hull sides fore and aft, ASW ordnance and sensors deleted. Sister Rodriguez (ex-Weaver, DE 741) is employed as an accommodations hulk for submarines at Callao.

♦ 2 Amazonas class Bldr: Electric Boat Co., Groton, Conn. (In serv. 1934)

11 Amazonas 12 Loreto



Loreto (12)

1975

D: 250 tons S: 15 kts Dim: 46.7 × 6.7 × 1.2

A: 2/76.2-mm DP (I × 2) -2/40-mm AA (I × 2) -2/20-mm AA (I × 2)

M: 2 diesels; 2 props; 750 hp Range: 4,000/10 Man: 5 officers, 20 men

Remarks: Based at Iquitos on Upper Amazon.

Note: Old river gunboat America (15), reported nonoperational 1981, may be retained as a hulk or relic.

PATROL CRAFT

♦ 3 P-33 class

Bldr: American Shipbldg. & Designs, Miami, Fla. (In serv. 1982)

P-33 (In serv. 15-9-82)

P-34 (In serv. 20-11-82)

P-35 (In serv. 4-2-83)

PATROL CRAFT (continued)



P-33

Am. Shipbldg., 1982

D: 4.8 tons (fl) **S:** 27 kts **Dim:** 10.06 (9.19 pp) \times 3.35 \times 0.76 **A:** 1 or 2/12.7-mm mg (I \times 1 or 2)

Electron Equipt: Radar: 1/Raytheon 2800 Range: 450/27

M: 2 Perkins ST-6-354-4M diesels; 2 props; 480 hp

Remarks: Glass-reinforced plastic construction with Kevlar armor.

AMPHIBIOUS WARFARE SHIPS

4 ex-U.S. Terrebone Parish-class tank landing ships

| | Bldr: | L | In serv. |
|-----------------------------------|----------------|---------|----------|
| DT 141 PAITA (ex-Walworth County, | Ingalls SB, | 18-5-53 | 26-10-53 |
| LST 1164) | Pascagoula | | |
| DT 142 Pisco (ex-Waldo County, | Ingalls SB, | 17-3-53 | 17-9-53 |
| 'LST 1163) | Pascagoula | | |
| DT 143 CALLAO (ex-Washoe County, | Ingalls SB, | 14-7-53 | 30-11-53 |
| LST 1165) | Pascagoula | | |
| DT 144 ETEN (ex-Traverse County, | Bath Iron Wks, | 3-10-53 | 19-12-53 |
| LST 1160) | Bath, Me. | | |

D: 2,590 tons (6,225 fl) S: 13 kts Dim: 117.35 × 16.76 × 3.7 mean (5.18 max.)

. Electron Equipt: Radar: . .

M: 4 G.M. 15-278A diesels; 2 CP props; 6,000 hp Electric: 600 kw

Range: 6,000/9 Fuel: 1,060 tons Man: . . .

REMARKS: Leased from U.S. for five years on 7-8-84; reactivated from Maritime Administration reserve by Todd SY, San Francisco, Cal., and delivered mid-10-84. Having been in Military Sealift Command Service from 1972 until deactivated, they were unarmed at time of transfer; formerly carried 6/76.2-mm DP (II \times 3), with 2 Mk 63 GFCS; were to receive some 40-mm AA after arrival in Peru. Have accommodation for 395 troops, bow ramp. Cargo: approx. 2,200 tons. All officially recommissioned 4-3-85.

Note: U.S. LST 1-class landing ships Paita (141, ex-Burnett County, LST 512) ran aground and was lost, 1983, and Salaverry (ex-Iquitos, ex-Carelne, ex-LST . . .) was stricken 1985. Sister Chimbote (142, ex-Rawhiti, ex-LST 283, decommissioned 3-85, exists as a storage hulk. The ex-U.S. medium landing ships Atico (37, ex-LSM 554) and Lomas (36, ex-LSM 396) were decommissioned in 3-85.

HYDROGRAPHIC SURVEY SHIPS

 1 oceanographic research and survey ship Bldr: SIMA, Callao

Laid down In serv. HUMBOLDT 13-10-78 1980 3-1-77

D: 1,200 tons (1,980 fl) **S**: 14 kts **Dim**: $76.0 \times 12.0 \times 4.4$

M: 2 diesels; 2 props; 3,000 hp Man: 48 tot.

Bldr: Levingston SB, Orange, Tex. ◆ 1 ex-U.S. Sotoyomo-class former tug

Laid down In serv. 136 Unanue (ex-Wateree, ATA 174) 5-10-43 18-11-43

D: 534 tons (835 fl) S: 13 kts Dim: 43.59 × 10.31 × 4.01

M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp Electric: 120 kw

REMARKS: Sold to Peru in 11-61. Refitted 1985 with reinforced bow, improved heating, for possible Antarctic expedition 1985-86.

♦ 2 Dutch Van Straelen-class inshore survey ships, former inshore mine-Bldr: De Vries-Leutsch, Amsterdam sweepers

Laid down AEH. . . Icaro (ex-Van Hamel, M 871) 27-4-59 28-5-60 14-10-60 6-10-61 AEH. . . Melo (ex-Van der Wel, M 878) 30-5-60 3-5-61

D: 151 tons (171 fl) S: 13 kts Dim: 33.08 (30.30 wl) × 6.88 × 1.80 Electron Equipt: Radar: 1/. . . nav. M: 2 Werkspoor diesels; 2 props; 1,100 hp

REMARKS: Purchased 23-2-84 for conversion in Peru to inshore survey duties. May have received interplot 200 survey system and new engines: 2 G.M. 16V92N diesels; 1,400 hp; wooden construction.

 1 inshore survey craft Bldr: SIMA, Chimbote (In serv. 1982)

AEH 174 N.

D: 49 tons S: 13 kts Dim: 19.8 × 5.2 × 0.9 M: Diesels Man: 3 crew, plus 2 scientists

Remarks: Has a side-looking sonar for bottom mapping to 1,200-m depths.

• 3 inshore survey craft (In serv. 1943)

AEH 173 N. (ex-YP 243) AEH 171 CARDENAS (ex-YP 99) AEH 172 N. (ex-YP 242)

D: 50 tons (60 fl) S: 12 kts Dim: 22.9 × 5.2 × 1.5

M: 2 Superior diesels; 2 props; 320 hp Fuel: 3 tons Man: 11 tot.

REMARKS: Ex-U.S. patrol craft, purchased in 11-58.

◆ 1 river research craft (In serv. 5-76)

N. Dim: 23.5 × . . . × . . . Man: 16 tot.

REMARKS: Operated on the Amazon by the Navy for the Oceanographic Institute.

REPLENISHMENT OILERS

• 1 Talara class Bldr: SIMA, Callao

Laid down L In serv. 152 TELARA 1975 9-7-76 3-77

D: 30,000 tons (fl) **S**: 16.25 kts **Dim**: 171.18 (161.55 pp) \times 25.38 \times 9.53 M: 1 Burmeister & Wain 6K 47EF diesel; 1 prop; 11,600 hp Electric: 1,890 kw

Remarks: 16,633 grt, 25,648 dwt. Cargo: 35,642 m3. Sisters Trompeteros and Bayovar (transferred 1979) are operated by Petroperu, the state fuel monopoly, which transferred this ship to the Navy upon completion. One underway fueling station per side.

 2 Parinas class Bldr: SIMA, Callao

L In serv. 155 Parinas 12-6-67 13-6-68 156 PIMENTAL 5-4-68 27-6-69



Parinas (155)

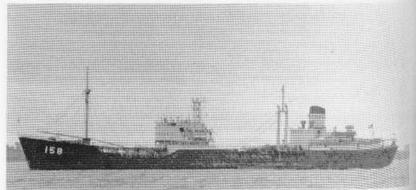
L. & L. Van Ginderen, 6-85

D: 13,600 tons (fl) S: 14.25 kts Dim: 134.19 (124.82 pp) × 18.98 × 7.27 M: 1 Burmeister & Wain 7-cyl. diesel; 1 prop; 4,900 hp Electric: 464 kw Fuel: 610 tons

Remarks: 7,121 grt, 10,140 dwt. Cargo: 13,851 m3. Normally used by Petroperu for commercial purposes, but have naval crews and can refuel ships from one rig on either beam. No. 156 had her commercial certification withdrawn 19-6-77 pending repairs.

 2 Sechura class Bldr: SIMA, Callao

Laid down L In serv. 158 Zorritos 8-10-58 1959 8-10-55 159 Lobitos 1964 5-65 1966



Zorritos (158)

H. Ehlers, 9-85

REPLENISHMENT OILERS (continued)

D: 8,700 tons (fl) S: 12 kts Dim: 116.82 (109.73 pp) × 15.91 × 6.63 M: 1 Burmeister & Wain 562-VTF-115 diesel; 1 prop; 2,400 hp Electric: 750 kw Fuel: 549 tons

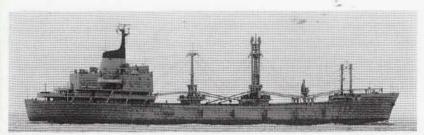
REMARKS: 4,297 grt, 5,732 dwt. Cargo: 7,488 m3. Sister Sechura, built in England 1952-55 and fully equipped for underway replenishment, was stricken in 1968. Nos. 158 and 159 are used for commercial cargoes for Petroperu, but have one fueling station on either beam.

CARGO SHIPS

1 Ilo-class transport

Bldr: SIMA, Callao

131 ILO



Ilo (131)

P. Voss, 8-84

D: 18,400 tons (fl) S: 15.6 kts Dim: 153.85 (144.53 pp) × 20.4 × 9.2 M: 1 B & W 6K 47EF diesel; 1 prop; 11,600 hp Electric: 1,140 kw

Remarks: In service 15-12-71. Cargo: 13,000 tons. Sister Rimac is in commercial service for the state shipping company. Ilo is also used to carry commercial cargo.

♦ 1 ex-U.S. Bellatrix-class attack cargo ship

Bldr: Tampa SB, Tampa, Fla.

L In serv. 31 INDEPENDENCIA (ex-Bellatrix, AKA 3, ex-Raven, AK 20) 16-4-41 16-2-42



Independencia (31)

J.-C. Bellonne, 2-83

D: 6,200 tons (14,225 fl) S: 15 kts Dim: 140.0 × 19.2 × 7.95

A: 1/127-mm DP-4/76.2-mm 50-cal. DP (I × 4)-10/20-mm AA (I × 10)

Electron Equipt: Radar: 1/SPS-6, 1/Decca . . . , 1/Mk 26

M: 1 Nordberg TSM diesel; 1 prop; 6,000 hp Range: 18,000/14

Man: 19 officers, 220 men

Remarks: Former U.S. C2-T-class-cargo ship. Refitted in 1954, and transferred under MAP in 20-7-63. Used for training midshipmen as well as for carrying military and commercial cargo (4,500 tons). Has one Mk 52 radar gunfire-control system and three Mk 51 gunfire-control systems. Normally carries two LCVP.

HOSPITAL SHIPS

 3 Morona class Bldr: SIMAI, Iquitos, 1976-77

D: 150 tons (fl) S: 12 kts Dim: 30.0 × 6.0 × 0.6 M: diesels; . . . hp

REMARKS: Serve on the upper Amazon River.

TUGS

Bldr: Cramp SB, Philadelphia, Pa. 1 ex-U.S. Cherokee-class ocean tug

Laid down In serv. 123 Guardian Rios (ex-Pinto, ATF 90) 10-8-42 5-1-43 1-4-43

D: 1,235 tons (1,675 fl) S: 16.5 kts Dim: 62.48 × 11.73 × 4.67

M: 4 G.M. 12-278 diesels, electric drive; 1 prop; 3,000 hp Electric: 260 kw Man: 85 tot.

Remarks: Transferred in 12-60. Unarmed. Used for salvage and rescue.

SERVICE CRAFT

Bldr: Ruhrorter, Duisburg, W. Germany (In 2 Selendon-class harbor tugs serv. 1967)

128 OLAYA 129 SELENDON

D: 80 grt S: 10 kts Dim: 61.3 × 20.3 × 2.3 M: 1 diesel; 1 prop; 600 hp

 1 river tug Bldr: SIMAI, Iquitos (In serv. 1973)

Contraestre Navarro

D: 50 tons

 1 ex-U.S. medium harbor tug Bldr: Ira S. Bushey, Brooklyn, NY (In serv. 1939)

124 Franco (ex-Tigre, ex-Menewa, YTM 2, ex-Consultor, YN 34)

D: 192 tons (fl) S: 9 kts Dim: 27.73 × 7.01 × 3.35

M: 1 diesel; 1 prop; 805 hp

REMARKS: Purchased 1940 by U.S. Navy for use as a net tender. Transferred in 14-3-47. Has push-bar built across bows for handling barges. Operates in the Upper Amazon

♦ 2 ex-U.S. 174-foot-class yard oilers

| | Bldr | Laid down | L | In serv. |
|---|-----------------------------------|-----------|---------|----------|
| N (ex- | Jeffersonville Boat & Mach., | 15-1-45 | 22-5-45 | 31-8-45 |
| YO 221) 111 COLAYERAS (ex-YO 171) | Ind. RTC Shbldg., Camden, N.J. | 18-3-44 | 20-7-44 | 15-11-44 |

D: 1,400 tons (fl) S: 10 kts Dim: 53.04 × 9.75 × 4.0 M: 2 diesels; 2 prop; 540 hp Range: 2,000/8 Man: 20 tot.

Remarks: Ex-YO 221 transferred in 2-75; ex-YO 171 purchased 26-1-81. Cargo: approximately 900 tons (6,570 barrels).

2 ex-U.S. 174-foot water tankers

| | Bldr | Laid down | L - | In serv. |
|--------------------------|----------------------------------|-----------|---------|----------|
| 110 Mantilla (ex-YW 122) | Henry C. Grebe, Chicago, Ill. | 29-6-45 | 22-9-45 | 17-11-45 |
| N (ex-YW | Leatham D. Smith, | 9-4-45 | 22-5-45 | 28-7-45 |

D: 440 tons (1,390 fl) S: 7 kts Dim: 53.04 × 9.75 × 4.0 M: 1 G.M. diesel; 1 prop; 640 hp Fuel: 25 tons Man: 23 tot.

Remarks: No. 110 transferred in 3-63; ex-YW 128 purchased 26-1-81. Cargo: 930 tons.

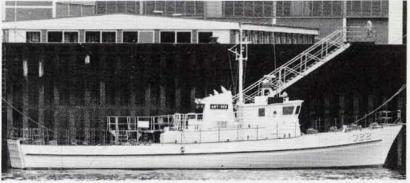
2 river-service water tankers

ABA 113 D: 330 tons Bldr: SIMAI, Iquitos (In serv. 1972)

ABA 091 Barge with 800-ton capacity Built: 1972

Bldr: Lürssen, Vegesack, W. Germany 1 torpedo retriever

ART 322 N. . . (In serv. 1-12-81)



ART 322

P. Voss, 9-81

D: 51.5 tons (65.5 fl) S: 19 kts Dim: 25.35 (23.47 pp) × 5.62 × 1.68 M: 2 MTU 8V 396 TC 82 diesels; 2 props; 1,590 hp Range: 500/15 Fuel: 14 tons Man: 9 tot.

REMARKS: Can stow 4 long or 8 short torpedoes on ramp aft.

• 1 floating dry dock Bldr: West Germany (In serv. 1979)

AFD 109

Dim: $195.0 \times 42.0 \times ...$ Lift capacity: 15,000 tons

REMARKS: Ordered 13-2-78; first unit lost en route Peru, 1978. Lift capacity can be increased to 18,000 tons by use of extension sections, bringing total length to 225 meters. A new 4,500-ton capacity dock is to be built by SIMA, Callao.

PERU (continued)

SERVICE CRAFT (continued)

♦ 1 ex-U.S. ARD 2-class floating dry dock Bldr: Pacific Bridge, Alameda, Cal.

AFD 112 (WY 20, ex-ARD 8) (In serv. 8-43)

Dim: 148.03 × 21.64 × 1.6 (light) Lift capacity: 3,500 tons

Remarks: In service in 1943. Transferred in 2-61; purchased outright 1981.

Bldr: Foundation Co., Kearny, ♦ 1 ex-U.S. AFDL 7-class floating dry dock N.J.

AFD 111 (ex-WY 19, ex-AFDL 33) (In serv. 10-44)

Dim: $87.78 \times 19.51 \times 0.99$ (light) Lift capacity: 1,900 tons

Remarks: In service in 10-44. Transferred in 7-59.

Bldr: Thornycroft, Southampton (In serv. 1951) • 1 small floating dry dock

Dim: 59.13 × 18.7 × . . . Lift capacity: 600 tons

REMARKS: Serves the Amazon Flotilla.

Bldr: DeKom SB, Brooklyn, NY ♦ 1 ex-U.S. YR 24-class floating workshop

Laid down L In serv. 22-4-44 RC 105 (ex-YR 59) 3-11-43 24-8-44

D: 520 tons (770 fl) Dim: 45.72 × 10.36 × 1.8 Electric: 220 kw

Fuel: 75 tons Man: 47 tot.

Remarks: Transferred 8-8-61.

• 1 floating crane

Capacity: 120 tons

REMARKS: Serves at Callao.

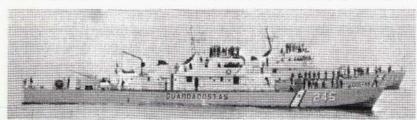
COAST GUARD

The Peruvian Coast Guard was established in 1975 and is intended to patrol to the extent of the 200-nautical-mile economic zone.

PATROL BOATS AND CRAFT

Bldr: SIMA, Chimbote (PC 248: SIMA, Callao) 6 Rio Cañete class

| | In serv. | | In serv. |
|-------------------|----------|-----------------------------|----------|
| PC 243 Rio Nepeña | 1-12-81 | PC 246 RIO HUARMEY | 1982 |
| PC 244 RIO TAMBO | 1982 | PC 247 Rio Zaña | 12-2-85 |
| PC 245 Rio Ocoña | 1982 | PC 248 Rio Cañete (ex-8234) | 31-3-76 |
| | | | |



Rio Ocoña (PC 245) - Rio Tambo (PC 244) in background

U.S. Navy, 1984

D: 296 tons (fl) **S**: 22 kts **Dim**: 50.98 (49.1 pp) \times 7.4 \times 1.7

A: 1/40-mm AA — 1/20-mm AA

M: 4 Bazán/MTU V8V 16/18 TLS diesels; 2 props; 5,640 hp Electric: 170 kw Endurance: 20 days Range: 3,000/17 Man: 4 officers, 26 men

REMARKS: PC 248 (ex-234), launched 8-10-74 as prototype, has 4 MTU diesels and a 21-kt max. speed. All but PC 248 have steel hulls, aluminum superstructure.

♦ 2 ex-U.S. PGM 71 class

Bldr In serv. Peterson, Sturgeon Bay, Wisc. PC 222 Rio Sama (ex-PGM 78) 9-66 PC 223 Rio Chira (ex-PGM 11) 6-72 SIMA. Callao

D: 130 tons (145 fl) **S:** 17 kts **Dim:** 30.8 (30.2 wl) \times 6.4 \times 1.85 A: 1/40-mm AA -4/20-mm AA (II \times 2) -2/12.7-mm mg (I \times 2)

Electron Equipt: Radar: 1/Raytheon 1500 Pathfinder

M: 8 G.M. 6-71 diesels; 2 props; 2,200 hp Range: 1,000/12 Man: 27 tot.

REMARKS: Transferred to the Coast Guard in 1975. Rio Chira was built with U.S. aid and equipment.

♦ 4 110-foot class Bldr: Vosper, Portsmouth

PC 224 Rio Chicawa (ex-18-11-64 PC 227 Rio Locumba (ex-18-2-65 De Los Heroes) Sanchez Carrion) PC 225 Rio Pativilca (ex-26-10-64 PC 229 Rio Vitor (ex-10-7-64 Herrera) Velarde)

D: 100 tons (130 fl) S: 30 kts Dim: 33.4 (31.46 wl) × 6.4 × 1.7 A: 2/20-mm AA Electron Equipt: Radar: 1/Decca TM 707

M: 2 Napier Deltic T38-37 diesels; 2 props; 6,280 hp

Range: 1,100/15 Man: 4 officers, 27 men

Remarks: All delivered under own power by 10-65. Never fully equipped with armament, although fittings for four 533-mm torpedo tubes were installed in the decks. Air-conditioned. Steel hull, aluminum-alloy superstructure. Transferred to the Coast Guard in 1975 and renamed, their old names going to a new class of naval guided-missile corvettes. Sister Rio Ica (228, ex-Sautillana) stricken 1982 and Rio Huaora (PC 226, ex-Larrea) in 1983.

♦ 7 "Anchova" class Bldr: MacLaren, Niteroi, Brazil (In serv. 1981-82)

PP 230 LA PUNTA PP 233 Majes PP 235 Rio Viru PP 231 CHILLON PP 236 RIO LURIN PP 234 REQUE

PP 232 SANTA

D: 43 tons (fl) **S:** 25 kts **Dim:** $18.6 \times 5.35 \times 1.65$ **A:** 2/20-mm AA **M:** 2 G.M. 12V71 TI diesels; 2 props; 1,800 hp

Remarks: Wooden construction. Chile also operates units of this class.

• 3 Rio Zarumilla class Bldr: Korody Marine, Viareggio, Italy (In serv. 5-9-60)

PC 241 Rio Tumbes PC 242 Rio Piura PC 240 Rio Zarumilla

D: 37 tons (fl) S: 18 kts Dim: 20.0 × 5.2 × 1.1 Range: 1,000/14 A: 2/40-mm AA (I × 2) M: 2 G.M. 8V71 diesels; 2 props; 1,200 hp

♦ 2 Rio Ramis class - on Lake Titicaca

PL 290 Rio Ramis PL 291 Rio Ilave

D: 12-14 tons (fl) S: . . . Dim: . . . × . . . × . . . A: 1/12.7-mm mg M: . . . Man: 4 tot.

◆ 3 patrol craft—on Bolivian border

RIO INAMBARI RIO ТАМВОРАТА

◆ 1 small patrol craft: RIO LAGATO

PHILIPPINES

Personnel (1983): 1,605 officers, 13,067 enlisted, plus 389 officers and 8,840 enlisted Marines. (Note: The Marine Corps has been authorized to grow to 1,039 officers, 14,389 enlisted.)

MERCHANT MARINE (1984): 946 ships - 3,441,076 grt (tankers: 78 ships - 867,814 grt)

NAVAL AVIATION: Ten Philippine-built Britten-Norman BN-2 Defender light maritime patrol aircraft and 10 MBB BO-105 helicopters are in service or on order. The Air Force purchased 3 Fokker F-27 Maritime patrol aircraft in 1981.

FUTURE PROGRAMS: In 6-83, plans were announced to acquire two 1,800-2,000-ton frigates using U.S. Foreign Military Sales credits, 50 fast patrol boats, and to establish a "Quick-Reaction Battalion" of 700 officers and men within the Marine Corps. There have been various reports of plans to acquire one or more submarines, possibly from France.

FRIGATES

1 ex-U.S. Savage class

Bldr Laid down L In serv. PS 4 RAJAH LAKANDULA Brown SB, Houston 27-1-43 16-4-43 16-9-45 (ex-Tran Hung Dao, ex-Camp, DER 251)



Rajah Lakandula (PS 4) - twin 40-mm AA now fwd of bridge

FRIGATES (continued)

D: 1,590 tons (1,850 fl) S: 19 kts Dim: 93.27 × 11.15 × 4.27

A: 2/76.2-mm DP Mk 34 (I \times 2) -2/40-mm AA (II \times 1) -4/20-mm AA (II \times 2) -1/81-mm mortar combined with 1/12.7-mm mg -2/12.7-mm mg -6/324-mm Mk 32 ASW TT (III \times 2)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-28, 1/Mk 34 Sonar: SQS-31

M: 4 Fairbanks-Morse 38D1/4 × 10 diesels; 2 props; 6,080 hp

Electric: 580 kw Fuel: 300 tons Range: 11,500/11 Man: 150 tot.

Remarks: Transferred to Vietnam 6-1-71; to the Philippines, 5-4-75. Converted to radar picket in the late 1950s, but most electronic warfare gear and ASW ordnance was removed in 1971. Has one Mk 63 and one Mk 51 gunfire-control system.

 4 ex-U.S. Barnegat-class former seaplane tenders ton SY, Houghton, Wash.

| | Laid down | L | In serv. |
|---|-----------|---------|----------|
| PS 7 Andres Bonifacio (ex-Ly Thoung Kiet, ex-Chincoteague, WHEC 375, ex-AVP 24) | 23-7-41 | 15-4-42 | 12-4-43 |
| PS 8 GREGORIO DE PILAR (ex-Ngo Kuyen, ex- McCulloch, WHEC 386, ex-Wachapreague, AGP 8, ex-AVP 56) | 1-2-43 | 10-7-43 | 17-5-44 |
| PS 9 DIEGO SILANG (ex-Tran Quang Khai, ex-Bering Strait, WHEC 382, ex-AVP 34) | 7-6-43 | 15-1-44 | 19-7-44 |
| PS 10 Francisco Dagahoy (ex-Tran Binh Trong, ex-Castle Rock, WHEC 383, ex-AVP 35) | 12-7-43 | 11-3-44 | 8-10-44 |



Andres Bonifacio (PS 7) - prior to alterations

1977

D: 1,766 tons (2,800 fl) **S:** 17 kts **Dim:** 95.72 (91.44 wl) \times 12.55 \times 4.27 **A:** 1/127-mm DP - 4/40-mm AA (II \times 1, I \times 2) - 2/20-mm AA (I \times 2) - 2/12.7-mm mg - 1/Bo-105 helicopter

Electron Equipt: Radar: 1/SPS-53, 1/SPS-29, 1/Mk 26

M: 4 Fairbanks-Morse 38D8% × 10 diesels; 2 props; 6,080 hp

Electric: 600 kw Fuel: 400 tons Range: 18,000/15 Man: 160 tot.

Remarks: Transferred to U.S. Coast Guard in 1946-48, PS 8 having served as a motor-torpedo-boat tender and the others as seaplane tenders. Transferred to South Vietnam in 1971-72 after extensive overhauls. Escaped from Vietnam 4-75 to Philippines, to which they were formally sold 5-4-76. Two other escapees, ex-Yakutat (WHEC 380) and Cook Inlet (WHEC 383) were in too poor condition to refit and have been used for cannibalization spares. All received helicopter decks at the 01 level aft in 1978-79; a twin 40-mm mount was added in a tub projecting over the stern, adding 1 meter to the original length. Have Mk 52 GFCS with Mk 26 radar for the 127-mm gun. Two are to be further modernized, with U.S. Harpoon SSM to be added, under the 1985 Budget.

• 2 ex-U.S. Cannon class Bldr: Federal SB & DD Co., Newark, N.J.

PF 5 Datu Sikatuna (ex-Asahi, ex-Amick, DE 168)

Laid down
30-11-42
27-5-43
26-7-43
PF 6 Rajah Humabon (ex-Hatsuhi, ex-Atherton,
DE 169)

D: 1,240 tons (1,620 fl) **S:** 20 kts **Dim:** 93.27 (91.44 wl) \times 11.15 \times 3.56 (hull) **A:** 3/76-mm DP (I \times 3) — 6/40-mm AA (II \times 3) — 12/20-mm AA (II \times 6) — 2/12.7-mm mg (I \times 2) — 6/Mk 6 d.c. projectors — 1/Hedgehog — 1/d.c. rack

Electron Equipt: Radar: 1/navigational, 1/Mk 26 Sonar: SQS-17B

M: 4 G.M. 16-278A diesels, electric drive; 2 props; 6,000 hp Electric: 680 kw Fuel: 260 tons Range: 11,600/11 Man: 165 tot.

Remarks: Transferred to Japan on 14-6-55 and stricken 6-75, reverting to U.S. ownership; they were sold to the Philippines 23-12-78 but remained laid up in Japan until towed to South Korea for overhaul in 1979. Both recommissioned 27-2-80. Have one Mk 52 radar GFCS and one Mk 41 range finder for 76.2-mm gun control, plus three Mk 51 Mod. 2 GFCS for the 40-mm guns. Sister Datu Kalantiaw (PS 76, ex-Booth, DE 170) was grounded in a typhoon 21-9-81 and lost.

CORVETTES

♦ 2 ex-U.S. Auk-class former minesweepers

| | Bldr | Laid down | L | In serv. |
|---------------------------|-------------------------|-----------|----------|----------|
| PS 69 RIZAL (ex-Murrelet, | Savannah Mach. & | 24-8-44 | 29-12-44 | 21-8-45 |
| MSF 372) | Foundry, Ga. | | | |
| PS 70 QUEZON | Associated SB, Seattle, | 28-11-42 | 5-4-43 | 28-2-44 |
| (ex-Vigilance, MSF 324) | Wash. | | | |



Rizal (PS 69) - prior to addition of helicopter deck

L. & L. Van Ginderen, 5-65

D: 890 tons (1,250 fl) **S**: 18 kts **Dim**: 67.39 (65.53 wl) \times 9.8 \times 3.28

A: 1/76.2-mm DP — 4/40-mm AA (II × 2) — 4/20-mm AA (II × 2) — 3/324-mm Mk 32 ASW TT (III × 2) — 1/4Hedgehog — 2/Mk 6 d.c. throwers — 2/d.c. racks

Electron Equipt: Radar: 1/SPS-5C Sonar: SQS-17B

M: 2 G.M. 12-278 (PS 70: 12-278A) diesels, electric drive; 2 props; 3,532 hp Electric: 360 kw Fuel: 216 tons Man: 100 tot.

Remarks: PS 69 transferred 18-6-65, PS 70 on 19-8-67. A small raised helicopter deck has replaced the after 76.2-mm gun.

♦ 7 ex-U.S. PCE 821 and PCER 848 classes

| | Bldr | Laid down | L | In serv. |
|--|------|-----------|----------|----------|
| PS 19 Miguel Malvar (ex-Ngoc Hoi, ex- Brattleboro, EPCER 852) | A | 28-10-43 | 1-3-44 | 26-5-44 |
| PS 22 Sultan Kudarat (ex-Dong Da II, ex-Crestview, PCE 895) | В | 2-12-42 | 18-5-43 | 30-10-44 |
| PS 23 DATU MARIKUDO (ex-Van Kiep II, ex-Amherst, PCER 853) | A | 16-11-43 | 18-3-44 | 16-6-44 |
| PS 28 CEBU (ex-PCE 881) | C | 11-8-43 | 10-11-43 | 31-7-44 |
| PS 29 Negros Occidental (ex-PCE 885) | C | 25-2-44 | 20-6-44 | 30-4-45 |
| PS 31 PANGASINAN (ex-PCE 891) | В | 28-10-42 | 24-4-43 | 15-6-44 |
| PS 32 ILOILO (ex-PCE 897) | В | 16-12-42 | 3-8-43 | 6-1-45 |
| | | | | |

Bldrs: A: Pullman Standard Car Co., Chicago; B: Willamette Iron & Steel Corp., Portland, Ore.; C: Albina Eng. & Machine Works, Portland, Ore.

D: 903 tons (fl) S: 15 kts Dim: 56.24 (54.86 wl) × 10.08 × 2.87

A: PS 19-23: 1/76.2-mm DP -2/40-mm AA (I \times 2) -8/20-mm AA (II \times 1) PS 28-32: 1/76.2-mm DP -6/40-mm AA (II \times 3) -4/20-mm AA (I \times 4)

Electron Equipt: Radar: 1/RCA CR 104A

M: 2 G.M. 12-278A diesels; 2 props; 2,000 hp (PS 19, 28, 31: 2 G.M. 12-567A diesels; 2 props; 1,800 hp)

Electric: 240-180 kw Fuel: 125 tons Range: 9,000/10 Man: 100 tot.

Remarks: PS 28 through PS 32 were transferred 7-48; a fifth, Leyte (PS 30, ex-PCE 885), was lost by grounding in 1979. PS 19 through 23 were transferred to South Vietnam on 11-7-66, 29-11-61, and 6-70, and escaped Vietnam in 5-75; they were sold to the Philippines 11-75 (PS 23: 5-4-76). All ASW equipment is now deleted from all units. Ex-PCER and EPCER originally had longer forecastles as rescue ships; they were brought to standard PCE configuration before transfer to South Vietnam. All generally resemble Magat Salamat, below.

♦ 1 ex-U.S. Admirable-class former minesweeper Railway, Seattle, Wash. Bldr: Winslow Marine

PS 20 Magat Salamat (ex-Chi Lang II, 23-9-45 ex-Gayety, MSF 239)

Laid down L In serv. 14-11-43 19-3-44 23-9-45

D: 650 tons light (905 fl) S: 14 kts Dim: 56.24 (54.86 wl) × 10.06 × 2.75 A: 1/76.2-mm DP − 2/40-mm (I × 2) − 8/20-mm AA (II × 4)

CORVETTES (continued)



Magat Salamat (PS 20)

1977

Electron Equipt: Radar: 1/RCA CR 104A Electric: 280 kw Fuel: 140 tons M: 2 Cooper-Bessemer GSB-8 diesels; 2 props; 1,710 hp

REMARKS: Transferred to Vietnam and escaped to the Philippines 4-75. Acquired by the latter in 11-75.

Note: The three South Korean Leopard-class guided-missile patrol boats reported ordered 1980 in the last edition were not, in fact, acquired.

PATROL BOATS

♦ 2 ex-U.S. PC 461-class former submarine chasers

| | Bldr | Laid down | L | In serv. |
|---|--------------------|-----------|---------|----------|
| PS 29 Negros Oriental | L.D. Smith, | 12-3-43 | 15-5-43 | 24-9-43 |
| ex-E 312, ex-L'Inconstant, ex-PC 1171) | Sturgeon Bay, Wis. | | | |
| PS 80 NUEVA VISCAYA (ex- | Brown SB, | 15-9-41 | 25-4-42 | 13-7-42 |
| USAF Altus ex-PC 568) | Houston, Tex. | | | |

D: 280 tons (450 fl) S: 18 kts Dim: 52.93 × 7.01 × 2.31 (hull)

A: 1/76.2-mm DP — 1/40-mm AA — 3 or 5/20-mm AA (I × 3 or 5)

M: 2 G.M. 16-278A diesels; 2 props; 2,880 hp Electric: 120 kw Fuel: 62 tons Man: 70 tot.

Remarks: PS 29 escaped from Cambodia to the Philippines and was acquired by the latter in 1976; she had previously been transferred to France in 1951, then to Cambodia in 1956. PS 80 served the U.S. Air Force 1963-68, transferring to the Philippines in 3-68. Both originally had different diesels, but now have been standardized.

• 6 Katapangan class

| | Bldr: | In serv. |
|-----------------------------------|-------------------------------|----------|
| P 101 KAGITINGAN | W. Müller, Hameln, West Germ. | 9-2-79 |
| P 102 Bagong Lakas | W. Müller, Hameln, West Germ. | 9-2-79 |
| P 103 KATAPANGAN | Cavite NSY | 1982 |
| P 104 BAGONG SILANG | Cavite NSY | 1982 |
| P 105 GENERAL AMILIO AGUINALDO | Cavite NSY | 1984 |
| P 106 N | Cavite NSY | |

D: 132 tons (150 fl) **S:** 16 kts **Dim:** $37.0 \times 6.2 \times 1.7$ **A:** 4/30-mm AA Emerlec (II \times 2) -2/12.7-mm mg (I \times 2)

M: 2 MTU MB 820 Db1 diesels; 2 props; 2,050 hp

REMARKS: Designed in West Germany. Prototype delivered for trials 11-10-78. Program to build more at Boseco, Bekan, abandoned due to poor performance; intended to reach 28 kts, but obviously underpowereed. P 105, launched 23-6-84, was described as a "missile boat."

♦ 1 ex-U.S. PGM 71 class Bldr: Peterson Builders, Sturgeon Bay, Wis.

PG 60 Basilan (ex-Hon Troc, ex-PGM 83)

D: 130 tons (145 fl) **S:** 17 kts **Dim:** 30.8 (30.2 wl) \times 6.4 \times 1.85

A: 1/40-mm AA -4/20-mm AA (II \times 2) -4/12.7-mm mg (III \times 2)

Electron Equipt: Radar: 1/Raytheon 1500B

M: 8 G.M. 6-71 diesels; 2 props; 2,200 hp Range: 1,000/12 Man: 27 tot.

REMARKS: In service 4-67. Escaped from Vietnam 4-75, the only one of her class to do so out of 20 transferred; acquired officially by the Philippines 12-76.

♦ 4 ex-U.S. PGM 39 class Bldr: Tacoma Boat, Tacoma, Wash.

| | In serv. |
|-------------------------------|----------|
| PG 61 AGUSAN (ex-PGM 39) | 3-60 |
| PG 62 CATANDUANES (ex-PGM 40) | 3-60 |
| PG 63 ROMBLON (ex-PGM 1) | 6-60 |
| PG 64 PALAWAN (ex-PGM 42) | 6-60 |

D: 122 tons **S:** 17 kts **Dim:** $30.6 \times 6.4 \times 2.1$ (props)

A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Raytheon 1500

M: 2 MTU MB 820 diesels; 2 props; 1,900 hp

Man: 15 tot.

AMPHIBIOUS WARFARE SHIPS

• 20 ex-U.S. LST 1 and LST 542-class landing ships

| | Bldr | In serv. |
|--|--------------|----------|
| LT 54 AGUSAN DEL SUR (ex-Nha Trang, ex-Jerome Cty., LST 848) | A | 20-1-45 |
| LT 86 CAGAYAN (ex-Hickman Cty., LST 825) | C | 8-12-44 |
| LT 87 COTABATO DEL SUR (ex-Thi Nai, ex-Cayuga Cty., LST 529) | D | 29-2-44 |
| LT 93 MINDORO OCCIDENTAL (ex-T-LST 222) | В | 10-9-43 |
| LT 94 Surigao Del Norte (ex-T-LST 488) | E | 24-5-43 |
| LT 95 Surigao Del Sur (ex-T-LST 546) | C | 27-3-44 |
| LT 97 Ilocos Norte (ex-Madera Cty., LST 905) | F | 20-1-45 |
| LT 500 Tarlac (ex-T-LST 47) | \mathbf{F} | 8-11-43 |
| LT 501 Laguna (ex-T-LST 230) | В | 3-11-43 |
| LT 502 Samar Oriental (ex-T-LST 287) | A | 15-12-43 |
| LT 503 Lanao Del Sur (ex-T-LST 491) | C | 3-12-43 |
| LT 504 Lanao Del Norte (ex-T-LST 566) | C | 29-5-44 |
| LT 505 Leyte Del Sur (ex-T-LST 607) | В | 24-4-44 |
| LT 506 Davao Oriental (ex-Oosumi, ex-Daggett Cty., LST 689) | D | 2-5-44 |
| LT 507 Benguet (ex-Davies Cty., T-LST 692) | D | 10-5-44 |
| LT 508 Aurora (ex-Harris Cty., T-LST 822) | C | 23-11-44 |
| LT 509 CAVITE (ex-Shimokita, ex-Hillsdale Cty., LST 835) | A | 20-11-44 |
| LT 510 Samar Del Norte (ex-Shiretoko, ex-Nansemond Cty., LST 1064) | G | 12-3-45 |
| LT 511 COTABATO DEL NORTE (ex-Orleans Parrish, T-LST 1069, ex-MSC 6, ex-LST 1069) | G | 31-3-45 |
| LT 512 Tawi-Tawi (ex-T-LST 1072) | G | 12-4-45 |
| | | |

Bldrs: A, American Bridge, Ambridge, Pa.; B, Chicago Bridge & Iron Co., Seneca, Ill.; C, Missouri Valley Bridge & Iron Co., Evansville, Ind.; D, Jeffersonville Boat and Machinery Co., Jeffersonville, Ind.; E, Kaiser Co., Richmond, Cal.; F, Dravo Corp., Pittsburgh, Pa.; G, Bethlehem Steel, Hingham, Mass.



Surigao del Sur (LT 95)

G. Arra

D: 1,620 tons (4,080 fl) S: 11 kts Dim: 99.98 (96.32 wl) × 15.24 × 4.29 A: 7-8/40-mm AA (II × 1 or 2, I × 4-6) — 2-4/20-mm AA (ex-T-LST: 6/20-mm AA) M: 2 G.M. 12-567A diesels (LT 510, 511, 512: 2 G.M. 12-278A); 2 props; 1,700 hp Electric: 300 kw Fuel: 570 tons Man: 60-100 tot.

Remarks: LT 54 and LT 87 escaped from Vietnam (to which they had been transferred in 4-70 and 12-63, respectively) in 4-75; they were officially transferred to the Philippines on 17-11-75. LT 86 and LT 97 were transferred in 11-69. LT 93, LT 94, and LT 95 were transferred unarmed in 7-72 but may since have received guns. LT 500-LT 505, LT 507, LT 508, LT 511, and LT 512 were purchased in 1976, having previously been stricken by the USN and laid up in Japan. LT 506, LT 509, and LT 510 had been transferred to Japan 4-61 and stricken in 1975; they were purchased in 1978. All the LT 500 series were refitted and thoroughly overhauled in Japan, recommissioning in 1978-79. Armament: Some ex-T-LSTs carry only four 20-mm AA (I×4), while others received a single 40-mm forward after transfer, plus several 20-mm AA. LT 87 has four sets of Welin davits for LCVP landing craft, the others only two; some ex-T-LSTs do not carry LCVPs.

♦ 4 ex-U.S. LSM 1-class landing ships

| | Bldr | L | In serv. |
|---|---------------------|----------|----------|
| LP 41 Isabela (ex-LSM 463) | Brown SB, Houston | 3-2-45 | 7-3-45 |
| LP 65 Batanes (ex-Huong Giang, ex-Oceanside, ex-LSM 175) | Charleston Naval SY | 3-8-44 | 25-9-44 |
| LP 66 WESTERN SAMAR (ex-Hat Giang, ex-9011, ex-LSM 335) | Pullman, Chicago | 10-11-44 | 9-12-44 |
| LP 68 MINDORO ORIENTAL (ex-LSM 320) | Pullman, Chicago | 20-7-44 | 19-8-44 |

D: 513 tons (1,095 fl) **S:** 12 kts **Dim:** $620.2 \times 10.52 \times 12.24$

A: 2/40-mm AA (II × 1) -4/20-mm AA (I × 4)

M: 2 G.M. 16-278A (LP 41: Fairbanks-Morse 38D8% \times 10) diesels; 2 props; 2,800 hp

Electric: 240 kw Fuel: 165 tons Range: 5,000/7

Man: 39 tot.

Remarks: LP 41 transferred 3-61, LP 68 in 4-62. LP 65 and LP 66 escaped from Vietnam (to which they had been transferred in 8-61 and 10-55, respectively, LP 65 having served in the French Navy from 1-54 to 10-55) in 4-75 and were officially transferred on 17-11-75. LP 66 was equipped with hospital facilities in a deckhouse filling much of her tank deck while in Vietnamese service, but retained guns. Ex-Han Giang, ex-LSM 110, which also escaped, was transferred also on 17-11-75, but was used for cannibalization.

AMPHIBIOUS WARFARE SHIPS (continued)

♦ 3 ex-U.S. LSSL 1-class gunfire-support landing ships

Bldr: Lawley & Sons, Neponset, Mass. (LS 49: Albina Eng. & Mach., Portland, Ore.)

| | L | In serv. |
|---|----------|----------|
| LF 48 CAMARINES SUR (ex-Nguyen Duc Bong, ex-LSSL 129) | 13-12-44 | 31-12-44 |
| LF 49 Sulu (ex-Nguyen Ngoc Long, ex-LSSL 96) | 6-1-45 | 24-1-45 |
| LF 50 LA UNION (ex-Doan Ngoc Tang, ex-Hallebarde, ex-LSSL 9) | 17-8-44 | 6-9-44 |

D: 250 tons (387 fl) S: 14.4 kts Dim: 48.15 × 7.21 × 1.73 A: 1/76-mm DP -4/20-mm AA (II \times 2) -4/12.7-mm mg (I \times 4) M: 8 G.M. 6-71 diesels; 2 CP props; 1,320 hp

Electric: 120 kw Fuel: 84 tons

Range: 5,000/12

Remarks: These are ex-Vietnamese ships (transferred 1965-66) that took refuge in the Philippines and were acquired by the latter 17-11-75. LF 50 had earlier served in the French (1951-55) and Japanese (1956-64) navies. Four additional ex-Japanese sisters were to have been transferred in 1978, but the sale was canceled.

♦ 3 ex-U.S. LCU 1466-class utility landing craft Bldr: Japan (In serv.

L. . . N. (ex-LCU 2002, ex-LCU 1603) L. . . N. (ex-LCU 2003, ex-LCU 1604) L. . . N. (ex-LCU 2005, ex-LCU 1606)

D: 180 tons (347 fl) **S:** 8 kts **Dim:** $35.05 \times 10.36 \times 1.6$ (aft) A: 2/20-mm AA (I × 2) M: 3 G.M. Gray Marine 64YTL diesels; 3 props; 675 hp Cargo capacity: 167 tons Man: 6 men plus 8 troops

Remarks: Built in Japan under the Offshore Procurement Plan; in service 3-55, stricken 1975. Purchased 17-11-75 while laid up, then refitted and recommissioned in

• 9 U.S. LCM(8)-class landing craft

LCM 258 LCM 260-LCM 266

D: 118 tons (fl) S: 9 kts Dim: 22.43 × 6.42 × 1.4 (aft) M: 4 G.M. 6-71 diesels; 2 props; 600 hp Cargo capacity: 54 tons

Remarks: Transferred 19-3-75. The similar Bagong Filipino (TK 81) and Dakila (TK 82), built in the Philippines, have been stricken.

◆ 75 ex-U.S. LCM(6)-class landing craft (Transferred 1955-75)

D: 56 tons (fl) S: 10 kts Dim: 17.1 × 4.4 × 1.2 (aft) M: 2 G.M. Gray Marine 64HN9 diesels; 2 props; 330 hp Cargo capacity: 30 tons

♦ 1 (+ . . .) Imelda-class LCVP Bldr: Navy Yd, Cavite (In serv. 7-85)

D: 8 tons **S:** 13 kts **Dim:** $11.0 \times 3.6 \times 0.76$ M: 1 G.M. 6-71 diesel; 1 prop; 225 hp

Remarks: Glass-reinforced plastic trimaran prototype.

AUXILIARY SHIPS

YACHTS

 1 presidential yacht Bldr: Vosper, Singapore (In serv. 12-77)

TP 77 Ang Pinuno

D: 150 tons S: 28.5 kts Dim: 37.9 × 7.2 × 3.8 Range: . . . Man: . . . A: None M: 3 MTU 12V538 TB91 diesels; 3 props; 7,500 hp

REMARKS: Used as a "command ship" for the president. White-painted. Sister Bataan is used as a search-and-rescue ship by the Coast Guard.

Bldr: Ishikawajima, Harima, Japan (In serv. 1959) • 1 former transport

TP 777 Ang Pangulo (ex-The President, ex-Roxas, ex-Lapu-Lapu)



Ang Pangulo (TP 777)

L. & L. Van Ginderen, 1980

D: 2,230 tons (2,750 fl) **S**: 18 kts **Dim**: $83.84 \times 13.01 \times 6.4$

A: 2/20-mm AA

M: 2 Mitsui-Burmeister & Wain DE 642 VBF 75 diesels; 2 props; 5,000 hp Electric: 820 kw Man: 81 men plus 48 passengers

Remarks: Built as war reparations. Can be converted for use as a troop transport.

TENDERS

♦ 3 ex-U.S. Achelous-class repair ships Bldr: Chicago Bridge & Iron Co., Seneca, Ill. (AR 67: Bethlehem Steel, Hingham, Mass.)

| | L | In serv. |
|--|----------|----------|
| AE 517 Yakal (ex-Satyr, ARL 23, ex-LST 852) | 13-11-44 | 24-11-44 |
| AR 67 Kamagong (ex-Aklan, ex-Romulus, ARL 22, ex-LST 926) | 15-11-44 | 9-12-44 |
| AR 88 NARRA (ex-Krishna, ARL 38, ex-LST 1149) | 25-5-45 | 3-12-45 |

D: 3,960 tons (fl) S: 11.6 kts Dim: 99.98 (96.32 wl) \times 15.24 \times 3.71 A: 8/40-mm AA (IV \times 2)

M: 2 G.M. 12-567A diesels; (AR 67: G.M. 12-278A); 2 props; 1,800 hp

Electric: 420 kw Fuel: 620 tons Man: 250 tot.

Remarks: AE 517, transferred 24-1-77, may be in use as an ammunition transport, based on the hull number, but was equipped for repair duties on delivery. AR 67 was transferred in 11-61 and AR 88 on 31-10-71. All have a 60-ton capacity A-frame lift boom to port and one 10-ton derrick and one 20-ton derrick.

♦ 2 ex-U.S. LST 542-class small craft tenders

Bldr In serv. AL 57 SIERRA MADRE (ex-Dumagat, ex-My Tho, Missouri Valley 14-11-44 ex-Harnett County, AGP 821, ex-LST 821) B & I, Evansville, Ind. AE 516 APAYAO (ex-Can Tho, ex-Garrett Dravo Corp., 28-8-44 County, AGP 786, ex-LST 786) Pittsburgh, Pa.

D: 1,620 tons (4,080 fl) **S:** 11.6 kts

Dim: 99.98 (96.32 wl) × 15.24 × 4.29 (max.)

A: 8/40-mm AA (II \times 2, I \times 4) -4/20-mm AA (II \times 2)

M: 2 G.M. 12-567A diesels; 2 props; 1,700 hp Electric: 500 kw

Fuel: 370 tons Range: 19,000/10 Man: 160 tot.

Remarks: Converted in the mid-1960s to act as tenders to riverine-warfare craft. Retain bow doors, but much of the tank deck is filled with repair ships and bins for spare parts. Helicopter deck amidships, tripod masts, 10-ton derrick, and enlarged hatch. Transferred to South Vietnam 10-70 and 4-71; both escaped 4-75 and purchased outright on 13-9-77. Different hull numbers (and change of letter-designator and name to AL 57 from AE 57) may indicate new roles.

CARGO TRANSPORTS

 1 ex-U.S Alamosa class Bldr: Froemming Bros. Inc., Milwaukee, Wis. TK 90 MACTAN (ex-Kukui, WAK 186, ex-Colquitt, AK 174)



Mactan (TK 90) - with LCM(6) on deck

R.A.N. 6-82

D: 4,900 tons (7,450 fl) **S**: 12 kts Dim: 103.18 (97.54 wl) × 15.24 × 6.43

A: 2/20-mm AA M: 1 Nordberg TSM6 diesel; 1 prop; 1,750 hp

Electric: 500 kw Fuel: 350 tons Man: 85 tot.

Remarks: In service 22-9-45; 6,071 dwt. Built for U.S. Maritime Commission, taken over by the Navy upon completion, then transferred to the U.S. Coast Guard 24-9-45. First platform deck in cargo-hold area converted to personnel accommodations. Transferred to the Philippines 1-3-72 and used as a military transport, supply ship, and lighthouse tender. Purchased outright 1-8-80.

CARGO TRANSPORTS (continued)

 3 ex-U.S. Army FS 381 class Bldr: Ingalls, Pascagoula, Miss. (In serv. 1943-44)

TK 79 LIMASAWA (ex-Nettle, WAK 129, ex-FS 169) AS 59 Badjao (ex-Miho, ex-FS 524)

AS 71 Mangyan (ex-Nasami, ex-FS 408)

D: 473 tons light (950 fl) S: 13 kts Dim: 53.8 (50.27 pp) × 9.75 × 3.05 A: 2/20-mm AA (I × 2) M: 2 G.M. 6-278A diesels; 2 props; 1,000 hp

Electric: 225 kw Cargo capacity: 345 tons

Fuel: 67 tons Range: 4,150/10, 3,700/11 Man: . . .

Remarks: Limasawa was loaned in 1-68 and purchased outright 31-8-78. The other two were purchased 24-9-76 after having served in the Japanese Navy as an inshore minesweeper depot ship and a mine-countermeasures support ship; they were to be refitted and were recommissioned during 1979. All were to serve as buoy tenders and lighthouse supply ships.

♦ 2 ex-U.S. Army FS 330 class Bldr: Higgins, Inc., New Orleans (In serv. 1943-44)

TK 46 CAPE BOJEADOR (ex-FS 203) TK 45 Lauis Ledge (ex-FS 185)



Cape Bojeador (TK 46) - in Coast Guard colors

G. Arra, 1977

D: 420 tons light (742 fl) **S:** 10 kts **Dim:** 51.77 (48.77 pp) \times 9.75 \times 2.43

A: 2/20-mm AA (I×2)

M: 4 Buda-Lanova 6 DHMR-1879 diesels; 2 props; 680 hp

Electric: 225 kw Fuel: 18 tons Range: 1,370/10 Man: . . .

REMARKS: TK 45 transferred 11-47; TK 46 transferred 2-50. Can carry up to 50 tons of fuel for a range of 3,830/10. Used as navigational buoy tenders and lighthouse supply ships. Cargo capacity: 150 tons.

Bldr: Australia (In serv. 1944) ♦ 1 ex-Australian motor stores lighter

TK. . . Pearl Bank (ex-U.S. Army LO 4, ex-. . .)

D: 140 tons light (345 fl) S: 8 kts Dim: 37.26 × 7.47 × 2.07 A: 2/20-mm AA M: 2 Fairbanks-Morse 35F8% diesels; 2 props; 240 hp Fuel: 20 tons Range: 2,000/6 Man: 35 tot.

Remarks: Transferred 1947. Used as a navigational buoy tender and lighthouse supply ship. Cargo capacity: 170 tons

1 ex-U.S. Admirable-class minesweeper

Bldr: Gulf SB Corp., Madison-

ville, La.

In serv. 25-10-44 24-11-43

Laid down TK 21 Mount Samat (ex-Pagasa, ex-Santa Maria, ex-Quest, MSF 281)



Mount Samat (TK 21)

G. Arra, 1977

D: 650 tons (945 fl) S: 14.8 kts Dim: 58.0 (54.86 wl) × 10.06 × 2.97 A: 2/20-mm AA M: 2 Cooper-Bessemer GSB-8 diesels; 2 props; 1,710 hp Electric: 280 kw Fuel: 138 tons Man: 60 tot.

Remarks: Transferred 2-7-48 and then converted to presidential yacht with considerable additions to superstructure and increased rake to bow. Now primarily used as a lighthouse supply ship. Has 2 navigational radars.

♦ 1 ex-U.S. Coast Guard Balsam-class buoy tender Bldr: Marine Iron & SB Corp., Duluth, Minn. (In serv. 2-5-44)

TK 89 Kalinga (ex-Redbud, WAGL 398, ex-T-AKL 398, ex-AG 398)



Kalinga (TK 89) - in Coast Guard colors

1977

D: 935 tons (1,020 fl) S: 13 kts Dim: 54.86 × 11.28 × 3.96 A: 1/20-mm AA M: 2 Cooper-Bessemer GSD-8 diesels; electric drive; 1 prop; 1,200 hp Range: 3,500/7.5 Man: 50 tot.

REMARKS: Built for U.S. Coast Guard, transferred to the U.S. Navy on 25-3-49 as AG 398, to Military Sealift Command on 10-49 as T-AKL 398, and returned 20-11-70 to the U.S. Coast Guard. Transferred to the Philippines 1-3-72. Has helicopter platform and ice-breaking bow - the latter a useful feature in Philippine waters.

SERVICE CRAFT

TANKERS

♦ 2 ex-U.S. 174-foot YO and YOG-class small tankers Bldr: R.T.C. SB, Camden, N.J. (YO 78: Puget Sound Naval SY, Washington)

| | Laid down | L | In serv. |
|-------------------------------|-----------|---------|----------|
| YO 43 LAKE NAUJAN (ex-YO 173) | 17-5-44 | 30-9-44 | 22-1-45 |
| YO 78 LAKE BUHI (ex-YOG 73) | 15-12-43 | 23-2-44 | 28-11-44 |



Lake Naujan (YO 43)

G. Arra, 1977

D: 445 tons light (1,420 fl) S: 8 kts Dim: 53.04 × 10.01 × 4.27

A: 2/20-mm AA (I × 2) Fuel: 25 tons Man: 23 tot.

M: 2 Union diesels; 2 props; 560 hp (YO 78: 2 G.M. 8-278A diesels; 2 props; 640 hp)

REMARKS: YO 43 was transferred in 7-48, and YO 78 (formerly used as a gasoline tanker in 7-67. Ex-U.S. YOG 33 and YOG 80, which escaped from Vietnam, were used for cannibalization spares. Cargo capacity: 985 tons. Sister Lake Mainit (YO 35) stricken

Bldr: L. D. Smith SB, Stur-♦ 3 ex-U.S. 174-foot YW-class water tankers geon Bay, Wis. (YW 111: Marine Iron & SB Co., Duluth, Minn.)

| | Laid down | L | In serv. |
|-------------------------------|-----------|----------|----------|
| YW 33 LAKE BOLUAN (ex-YW 111) | 30-9-44 | 16-12-44 | 1-8-45 |
| YW 34 LAKE PAOAY (ex-YW 130) | 14-5-45 | 24-6-45 | 28-8-45 |
| YW 42 LAKE LANAO (ex-YW 125) | 18-12-44 | 7-4-45 | 16-6-45 |

D: 440 tons light (1,390 fl) S: 8 kts Dim: 53.04 × 10.01 × 4.0 A: 2/20-mm AA (I × 2) M: 2 G.M. 8-278A diesels; 2 props; 640 hp Electric: 80 kw Fuel: 25 tons Man: 23 tot.

Remarks: Transferred YW 33 and YW 34 on 16-7-75 and YW 42 in 7-78. Cargo capacity: 930 tons.

THES

• 1 ex-U.S. Army tug

YQ 58 TIBOLI (ex-LT 1976)

REMARKS: Transferred, 3-76.

 5 ex-U.S. YTL 442 class Bldr: Everett-Pacific Co., Everett, Wash. (YQ 222: Winslow Marine Railway & SB, Winslow, Wash.)

YQ 222 IGOROT (ex-YTL 572)

YQ 226 TASADAY (ex-YTL 425)

YQ 223 TAGBANUA (ex-YTL 429)

YQ 271 AGNO RIVER (ex-YAS 3, ex-YTL 750)

YQ 225 ILONGOT (ex-YTL 427)

D: 70 tons (80 fl) S: 9 kts Dim: 20.17 × 5.18 × 1.5

M: 1 Hamilton 685A diesel; 300 hp

REMARKS: Built 1944-45. Transferred 7-48, 5-63, 12-69, 8-71, and 11-75—the last from Japan, which had received her from the U.S. in 1-55. The ex-Japanese craft was overhauled and arrived in the Philippines during 1979, sister ex-YAS 4 (ex-YTL 748) having been lost overboard en route.

FLOATING DRY DOCKS

* 1 ex-U.S. AFDL Bldr: V.P. Loftis, Wilmington, N.C. (In serv. 11-44)

YD 205 (ex-AFDL 44, ex-ARDC 11)

Lift Capacity: 2,800 tons Dim: 118.6 × 25.6 × 3.1 (light)

Remarks: Transferred, 9-69. Purchased outright 1-8-80.

* 3 ex-U.S. AFDL 1 class

| | Bldr | In serv. | Transferre |
|---------------------|----------------------------------|----------|------------|
| YD 200 (ex-AFDL 24) | Doullet & Ewin, Mobile, Ala. | 1-44 | 7-48 |
| YD 204 (ex-AFDL 20) | G.D. Auchter, Jacksonville, Fla. | 6-44 | 10-61 |
| YD (ex-AFDL 10) | Chicago Bridge & Iron | 12-43 | 12-78 |

Lift Capacity: 1,000 tons Dim: 60.96 × 19.51 × 1.04 (light)

REMARKS: YD 200 transferred 7-48, YD 204 loaned 10-61, purchased 1-8-80; ex-AFDL 10 loaned 12-78.

• 2 ex-U.S. Army

Transferred YD 201 (ex-AFDL 3681) 1943 5-52YD 203 (ex-AFDL 3682) 1943 8-55

Lift Capacity: 150 tons Dim: $30.63 \times 15.83 \times 1.0$ (light)

FLOATING CRANES

1 ex-U.S. floating crane

In serv. Transferred YU 206 (ex-YD 163) 12-5-46 1-71

D: 650 tons (fl) Dim: 36.58 × 13.72 × 2.13 Lift Capacity: 30 tons

* 2 ex-U.S. floating crane

In serv. Transferred YU 207 (ex-YD 191) 3-52 8-71

D: 920 tons (fl) Dim: 36.58 × 18.24 × 2.13 Lift Capacity: 60 tons

FLOATING REPAIR BARGES

1 ex-U.S. Army 230 class

Transferred Τ. YD 202 (ex-...) 1943 7-49

D: 2,100 tons (fl) Dim: 64.0 × 12.5 × 3.4 A: 2/20-mm AA

BARGES

♦ 1 ex-U.S. YCV 3-class former aircraft transport lighter Bldr: Pearl Harbor Naval SY (In serv. 25-11-43)

YB 206 (ex-YCV 7)

Dim: 33.53 × 9.14 × . . . Cargo Capacity: 250 tons

Remarks: Transferred, 5-63

* 2 ex-U.S. Navy barges

Transferred 8-59

YC 207 (ex-YC 1402) YC 301 (ex-YC 1403) 8-71

Dim: $24.38 \times 8.73 \times 1.22$

COAST GUARD

Personnel (1983): 300 officers, 1,700 enlisted men

The size of the Philippine Coast Guard has fluctuated widely since its establishment in the early 1970s. At one time it had responsibility for maintaining navigational aids and included many of the tenders now returned to the Navy. The majority of the patrol

craft operated by the Coast Guard have been back under naval control since 1977, leaving only a few small craft and the larger ships described below still under Coast Guard control. In 1982, most small patrol craft in Philippine military service appeared to be under Coast Guard subordination.

PATROL BOATS

 1 Bessang Pass-class search-and-rescue boat Bldr: Sumidagawa, Tokyo, Japan (In serv. 1976-77)

SAR 100 TIRAD PASS



Bessang Pass (SAR 99) - since lost

G. Arra, 1977

D: 275 tons (fl) S: 30 kts Dim: 44.0 × 7.4 × 1.5 A: None M: 2 diesels; 2 props; . . . hp Man: 32 tot.

REMARKS: Sister Bessang Pass (SAR 99) ran aground and was lost 9-83. Similar craft constructed for Indian Coast Guard.

♦ 1 search-and-rescue boat Bldr: Vosper, Singapore (In serv. 12-75)

SAR 77 BATAAN

D: 150 tons S: 28 kts Dim: 37.9 × 7.2 × 3.8 M: 3 MTU 12V538 TB91 diesels; 3 props; 7,500 hp

Remarks: Externally identical to presidential yacht Ang Pinuno (TP 77).

PATROL CRAFT

◆ 1 (+ . . .) Mk II design Bldr: Cavite Navy Yd. (In serv. 7-85)

D: 24.6 tons (fl) S: 36 kts Dim: 16.7 × 5.0 × 1.3 Electron Equipt: Radar: 1/. . . nav. M: 2 MTU 8V396 TB93 diesels; 2 props; 2,400 hp

Remarks: Improved version of following class; glass-reinforced plastic hull.

• 25 fiberglass-hulled Bldr: Marcelo, Manila, 1975-76

PSB 411 through PSB 435



PSB 431

R.A.N., 6-82

D: 15 ton (21.75 fl) S: 20 kts Dim: 14.07 × 4.32 × 1.04 (1.48 props) A: 3/12.7-mm mg (II × 1, I × 1) Electron Equipt: Radar: 1/LN-66 M: 2 MTU 8V-331 TC80 diesels; 2 props; 1,800 hp Electric: 7.5 kVA Range: 200/36 Man: 6 tot.

Remarks: Eighty were ordered 8-75, but of 25 hulls completed during 1975, 15 were destroyed by fire, and the program was terminated. Twin machine-gun mount is recessed into the forecastle. Later examples employ Cummins diesels; craft originally intended to achieve 46 kts(!).

• 6 Australian fiberglass-hulled Bldr: De Havilland Marine, Sydney

PC 326-331 (In serv. 20-11-74 to 8-2-75)

D: 16.5 tons (fl) S: 25 kts Dim: 14.0 × 4.6 × 1.0 A: 2/12.7-mm mg M: 2 Caterpillar D348 diesels; 2 props; 740 hp Range: 500/12 Man: 8 tot.

* 20 U.S. Swift Mk III class Bldr: Sewart Seacraft, Morgan City, Louisiana PCF 333 through PCF 352 (In serv. 1972-76)

PHILIPPINES (continued) PATROL CRAFT (continued)



PCF 335 - with Swift Mk II PCF 308 in background

G. Arra, 1977

D: 28 tons (36.7 fl) **S**: 30 kts **Dim**: $19.78 \times 5.5 \times 1.8$ A: 2/12.7-mm mg (I \times 2) -2/7.6-mm mg (I \times 2)

Electron Equipt: Radar: 1/LN-66

M: 3 G.M. 8V71 TI diesels; 3 props; 1,950 hp Range: 500/30

Man: 8 tot.

Remarks: Aluminum construction. Pilothouse offset to starboard. In service 1972-76.

• 3 Abra class

| | Bldr | In serv |
|----------------|-------------------|---------|
| FB 83 Abra | Vosper, Singapore | 8-1-70 |
| FB 84 BUKINDON | Cavite NY | 1971 |
| FB 85 TABLAS | Cavite NY | 1975 |

D: 40 tons **S:** 25 kts **Dim:** $26.7 \times 5.8 \times 1.5$

A: 2/20-mm AA M: 2 MTU diesels; 2 props; 2,400 hp Man: 3 officers, 12 men

Remarks: Wooden hulls, aluminum superstructure. Construction financed by Australia. FB 85 disarmed in 1980.

♦ 12 U.S. Swift Mk I and II class Bldr: Sewart, Berwick, La.

PCF 300 PCF 301 PCF 306 PCF 307 PCF 309-316



PCF 308 — Swift Mk II type (stricken 1979)

G. Arra, 1977

D: 17.5 tons (22.1 fl) S: 24 kts Dim: 15.66 × 4.55 × 1.8 (props)
A: 2/12.7-mm mg (II × 1) Electron Equipt: Radar: 1/Raytheon 1500B M: 2 G.M. 12V71 N diesels; 2 props; 850 hp Electric: 6 kw

Range: 400/22 Man: 6 tot.

Remarks: In service 1966-70. PCF 300 and PCF 301, transferred 1966, are Swift Mk I class, 15.3 overall and with flush-decked hulls. All-aluminum construction. PCF 303, PCF 324, PCF 325, and PCF 317 (the last of ferro-concrete construction and used as a yacht) were discarded in 1976; PCF 304, PCF 305, and one other were written off in 1976, and PCF 308 was discarded 1979.

COAST AND GEODETIC SURVEY

The ships listed below are subordinate to the Ministry of Defense and are used for hydrographic survey.

 1 survey ship Bldr: Ishikawajima Harima, Tokyo

EXPLORER (In serv. 9-2-84)

D: 500 grt S: 12 kts Dim: 54.50 × 9.40 × 3.80

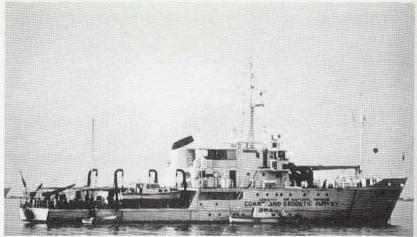
M: 2 diesels; 2 props; 1,200 hp

 1 survey ship Bldr: Walkers, Maryborough, Australia (In serv. 1969)

ATYIMBA

D: 611 tons (686 fl) **S:** 11 kts **Dim:** 49.08 (44.3 pp) \times 10.14 \times 2.74 M: Mirrlees-Blackstone 6-cyl. diesels; 1,620 hp

Electric: 175 kw Range: 5,000/8 Man: 54 tot.



Atyimba

L. & L. Van Ginderen, 1981

 2 Arinya-class coastal survey ships Bldr: Walkers, Maryborough, Austra-

ARINYA (L: 1962) ALUNYA (L: 1964)

D: 245 tons (fl) S: 10 kts Dim: 30.64 (27.44 pp) × 6.76 × 2.43 M: 2 G.M. 6-71 diesels; 2 props; 336 hp Man: 6 officers, 27 men

1 ex-U.S. Coast & Geodetic Survey ship Bldr: Lake Washington SY, Houghton, Wash.

Laid down In serv. Pathfinder (ex-Pathfinder, OSS 30, ex-AGS 1) 3-9-42 31-8-43

D: 2,175 tons (fl) **S**: 14 kts **Dim**: 69.9 (63.8 wl) \times 11.89 \times 4.88

M: 2 sets GT; 2 props; 2,000 hp Electric: 145 kw

Boilers: 2 Babcock & Wilcox, 22 kg/cm2, 330°C Fuel: 340 tons Man: 150 tot.

Remarks: Served in the U.S. Navy during World War II, transferred to the Philippines in the mid-1970s.

POLAND

Polish People's Republic

Personnel (1985): 19,500 total, including 4,100 coast defense personnel

Merchant Marine (1984): 783 ships, 3,267,281 grt (tankers: 24 ships, 237,026 grt)

NAVAL AVIATION: About 40 Mig-17 Fresco and 40 Mig-21 Fishbed fighters and 15 IL-28 Beagle bombers, and about 10 Mi-2 Hoplite, 5 Mi-8 Hip and 10 Mi-4 Hound helicopters. All are of Soviet origin, and all but the Hips are in need of replacement.

SUBMARINES

· 3 ex-Soviet Whiskey class

293 SOKOL 294 KONDOR 295 BIELIK

D: 1,050/1,350 tons **S**: 17/13.5 kts **Dim**: $76.0 \times 6.3 \times 4.8$ A: 6/533-mm TT (4 fwd, 2 aft - 14 torpedoes or 28 mines)

Electron Equipt: Radar: 1/Snoop Plate

Sonar: passive array; Tamir 5 MF active

M: 2 Type 37D, 2,000-hp diesels, diesel-electric drive; 2 props; 2,500 hp Endurance: 40 days Range: 6,000/5 snorkel Man: 50 tot.

Remarks: Transferred 1962-65. Sister Orzel (292) stricken 30-12-83.

GUIDED-MISSILE DESTROYER

◆ 1 ex-Soviet SAM Kotlin class (In serv. 1958)

275 WARSZAWA (ex-Spravedlivyy)



Warszawa (275)

16th Flot., French Navy, 8-83

GUIDED-MISSILE DESTROYER (continued)



Warszawa (275)

Polish Navy

D: 2,600 tons (3,500 ft) S: 36 kts Dim: $126.5 \times 13.0 \times 4.6$ (5.6 sonar) A: 1/SA-N-1 SAM system (II \times 1; 16 missles) -2/130-mm DP (II \times 1) -4/45-mm AA (IV \times 1) -2/RBU-2500 ASW RL (XVI \times 2) -5/533-mm TT (V \times 1) -2/d.c. racks (12 d.c.)

Electron Equipt: Radar: 2/RN-231, 1/Head Net A, 1/Sun Visor, 1/Hawk Screech, 2/Peel Group IFF: 2/Square Head, 1/Salt Pot

Sonar: 1/Pegas MF—EW: M: 2 sets GT; 2 props; 72,000 hp Boilers: 4; 64 kg/cm², 510°C

Electric: 1,400 kw Range: 1,050/34; 3,600/18 Man: 285 tot.

REMARKS: Transferred in 1970, having completed conversion in 1969. Maintained in immaculate condition. Depth charge racks added early 1980s.

FRIGATES

♦ 0 (+1+...) new design Bldr: ...

. . . N. . . (In serv. 1985-86)

D: Approx. 1,100 tons S: . . . Dim: 81.0 × 10.0 × 3.0

A: . . .

Electron Equipt: . . .

M: CODAG?

Remarks: NATO temporary nickname: "Balcom 6." First seagoing surface combatant built in Poland since before World War II. Series expected to produce four units.

GUIDED-MISSILE PATROL BOATS

♦ 2 (+ . . .) Soviet Tarantul I class Bldr: Sridniy Neva SY, Rolpino

434 Gornik (In serv. 30-12-83) 435 Hutnik (In serv. 31-3-84) 436 Stoczniowiec (In serv. 1985)



Gornik

Polish Navy, 1984

D: 385 tons (455 fl)
 S: 40 kts
 Dim: 56.10 × 10.2 × 2.20 (3.50 props)
 A: 4/SS-N-2C SSM (II × 2) — 1/76.2-mm DP — 1/SA-N-5 point-defense SAM syst. (IV × 1) — 2/30-mm gatling AA (I × 2)

Electron Equipt: Radar: 1/Krivach nav., 1/Plank Shave, 1/BASS Tilt IFF: 1/Square Head, 1/Salt Pot transponder

M: COGOG: 2 NK-12MV, 12,000 hp gas turbines; 2 4,000 hp cruise gas turbines; 2 props; 24,000 hp

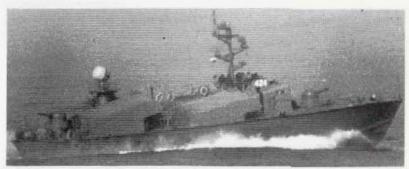
Range: 2,300/. . . (1 cruise turbine) Man: 38 tot.

Remarks: Beam is 10.5 m across missile sponsors. Unlike Soviet Navy version, have no EW gear. $\dot{}$

* 13 Osa-I class

421-433

D: 185 tons (215 fl) S: 36 kts Dim: $38.6 \times 7.6 \times 1.8$ A: 4/SS-N-2A Styx SSM (1×4) — 4/30-mm AA (11×2)



Polish Navy Osa-I 424

1980

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2 Square Head, 1/High Pole B

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 30 tot.
REMARKS: Built in the U.S.S.R. during the early 1960s, transferred 1966-1967. Two

TORPEDO BOATS

8 Wisla class Bldr: Poland, 1970-74
 452 453 454 457 458 459 468 469

names are known: Gdynia (421) and Darlowo (430).



Wisla class (496) - old number

D: 68 tons (80 fl) S: 50 kts Dim: 24.0 × 7.8 × 1.5

A: 2/30-mm AA-4/533-mm TT

Electron Equipt: Radar: 1 Pot Head-IFF: 1/High Pole A

M: 4 M50-F4 diesels; 4 props; 4,800 hp Range: 100/50; 500/20 Man: 16 tot.

REMARKS: Two units discarded 1983.

PATROL BOATS

• 8 Modified Obluze class Bldr: Oksywie SY, 1970-72 351-358



Modified Obluze-class Zawziety (353)

1975

D: 210 tons (240 fl) S: 24 kts Dim: 41.0 (39.5 pp) × 6.0 × 2.0 (hull) A: 4/30-mm AA (II × 2) — 4/d.c. racks (2 topside; 2 through stern) Electron Equipt: Radar: 1/RN-231, 1/Drum Tilt

Electron Equipt: Radar: 1/RN-231, 1/Drum Tilt
Sonar: 1/Tamir-11—IFF: 2/Square Head, 1/High Pole

M: 2 Type 40D diesels; 2 props; 5,000 hp Electric: 150 kw Fuel: 25 tons Man: 40 tot.

Remarks: Similar to a larger group in the Polish Border Guard that do not have Drum Tilt fire-control radars. Three names are known; Wyterwaiy (352), Zawziety (353), and Zreczny (356).

MINE WARFARE SHIPS

◆ 12 Krogulec-class minesweepers Bldr: Stocznia Gdynska, Gdynia, 1963-67

 613 Orlik
 617 Czajda
 621 Kania

 614 Krogulec
 618 Albatros
 622 Jaskolka

 615 Jastrzab
 619 Pelikan
 623 Zuraw

 616 Kormoran
 620 Tukan
 624 Czapla



Krogulec class - with six 25-mm AA

Polish Navy



Krogulec class - with four 23-mm AA aft

1978

612 ZBIK

D: 450 tons (484 fl) **S:** 18 kts **Dim:** 60.0 (58.0 pp) \times 7.6 \times 2.3 **A:** 6/25-mm AA (II \times 3) - 2/d.c. racks - mines

M: 2 Fiat A-230S diesels; 2 props; 3,740 hp Range: 3,200/12

Electron Equipt: Radar: 1/RN-231 Fuel: 55 tons

Man: 6 officers, 24 men

Remarks: Some of these ships have four 23-mm rapid-fire AA (II \times 2) mounted aft in place of the original four 25-mm AA. Hull numbers currently 625 and up.

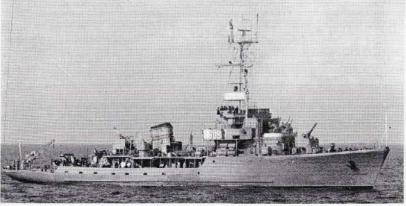
 12 Soviet T 43-type minesweepers Bldr: Stocznia Gdynska, Gdynia, 1957-62

1957-62 601 Zubr 603 Loz 605 Bizon 607 Rozmak 609 Foka 611 Rys

602 Tur 604 Dzik 606 Bobr 608 Delfin 610 Mors D: 520 tons (590 fl) S: 14 kts Dim: 60.0 × 8.6 × 2.3 (3.5 sonar)

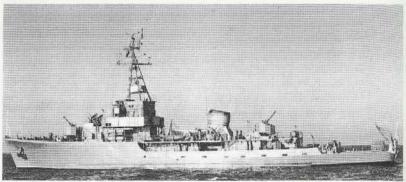
A: 4/37-mm AA (II × 2) — 4/25-mm AA (II × 2) — 4/14.5-mm mg (II × 2) — 2/d.c. projectors — mines

Electron Equipt: Radar: 1/RN-231—Sonar: 1/Tamir-11 IFF: 1/Square Head, 1/High Pole A



Foka (609) — long-hulled version

1978



Zubr (601) - short-hulled version

Polish Navy

M: 2 Type 9D diesels; 2 props; 2,200 hp Electric: 550 kw Fuel: 70 tons Range: 3,200/10 Man: 7 officers, 33 men

Remarks: Zubr, Tur, Loz, and Dzik, built in the U.S.S.R., are 2 meters shorter and displace 569 tons (fl); they have 8/14.5-mm mg, but no 25-mm AA. Tur has been converted into a radar picket, losing the after twin 37-mm AA and all sweep capability in favor of a quadripod mast to support a large radar antenna.

◆ 3 (+ . . .) Notek-class coastal minesweepers Bldr: Gdynia NSY 630 Goplo (In serv. 2-82) 631 Gardno (In serv. 31-3-84) 632 N. . . (In serv. 1985)



Goplo (630)

Polish Navy, 10-84

D: 250 tons (fl) S: 12 kts Dim: 38.5 × 8.3 × 1.9 A: 2/25-mm AA (II × 2) M: 2 diesels; 2 props; . . . hp

Remarks: Glass-reinforced plastic construction. First unit launched 16-4-81.

♦ 2 (+ . . .) Leniwka-class minesweeping boats

625 626

 $D: \ldots \quad S: \ldots \quad Dim: \ldots \times \ldots \times \ldots$

A: . . . M: . . .

Remarks: No details available; first reported 1985.

◆ 23 K 8-class inshore minesweepers Bldr: Gdansk SY, Poland (In serv. 1953-60)

931 - 953



Polish Navy K-8-class inshore minesweeper

1977

D: 20 tons (26 fl) S: 12 kts Dim: 17.0 × 3.2 × 0.8 A: 2/14.5-mm mg (II × 1) M: 2 3D6 diesels; 2 props; 600 hp

Remarks: Wooden hulls; simple wire sweeps only. Most in reserve, land-stored. Five have been discarded.

AMPHIBIOUS WARFARE SHIPS

♦ 1 Soviet Polnocny-C-class landing ship serv. 1971)

Bldr: Polnocny SY, Gdansk (In

811 GRUNWALD

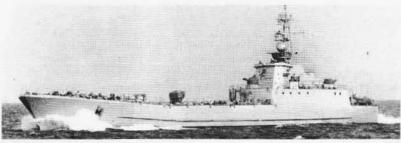
D: 1,150 tons (fl) S: 18 kts Dim: $81.3 \times 10.1 \times 2.1$ A: 4/30-mm AA (II \times 2) — 2/140-mm RL (XVIII \times 2) Electron Equipt: Radar: 1/Drum Tilt, 1/Don 2 IFF: 1/Square Head, 1/High Pole A M: 2 Type 40D diesels; 2 props; 5,000 hp Range: 900/17

Bldr: Polnocny SY, Gdansk (In * 22 Polnocny-A and -B-class landing ships serv. 1964-70)

Balas, Brda, Janow, Lenina, Narwik, Polichno, Rablow, Studziank, Warta, and 13 others-Nos. 801-810, 888-899



Polish Navy Polnocny-A



Polish Navy Polnocny-B

D: A: 770 tons (fl); B: 740 tons (800 fl) S: 19 kts Dim: 73.0 (B: 74.0) × 8.6 × 1.9 A: 4/30-mm AA — 2/140-mm RL (XVIII × 2) Electron Equipt: Radar: 1/RN-231, 1/Drum Tilt

IFF: 1/Square Head, 1/High Pole A

M: 2 Type 40D diesels; 2 props; 5,000 hp Fuel: 36 tons Range: 900/18 Man: 35 tot.

REMARKS: Polnocny-A has blunt, convex bow form; the "B" version introduced a raked, flared bow to improve seaworthiness. Unlike Soviet Navy units, Polish Polnocnys have a standard armament suit. Cargo: 180 tons vehicles, 130 troops. 801-810 and 890 are Type A; 888, 889 891-899 are Type B. At least one Type A has a high bridge and low-mounted Drum Tilt radar like the "B" version. Some now receiving 2-4 SA-N-5 launchers (IV × 2 or 4), as on Soviet units of the class.

4 Marabut-class landing craft (In serv. 1975)

873



Marabut class (872)

D: 60 tons (fl) S: 15 kts Dim: 21.0 × 4.2 × 1.0 A: 1/14.5-mm mg M: 2 diesels; 2 props; . . . hp

Remarks: Glass-reinforced plastic construction.

15 Eichstaden-class personnel landing craft (In serv. early 1960s)

857-871

D: 25 tons (fl) S: 18 kts Dim: 16.6 × 4.0 × 1.7 A: Small arms M: 2 3D6 diesels; 2 props; 300 hp Man: 3 tot.

Remarks: Cargo: 20 troops. Pointed bow, troops exiting cargo compartment via ramps on sides.



Eichstaden class (866)

Polish Navy, 1983

HYDROGRAPHIC SHIPS

2 modified Fenik class

Bldr: Polnocny SY, Gdansk (In serv. 2-83)

266 ARCTOWSKI 265 Heweliusz



Arctowski (266)

M.O.D., Bonn, 1984

D: 1,200 tons (fl) S: 13 kts Dim: 61.30 × 10.80 × 3.27 Electric: 675 kVA Electron Equipt: Radar: 1/RN-231 Range: 3,000/10

Man: 5 officers, 23 men

M: 2 Cegielski-Sulzer 6 AL 25/30 diesels; 2 CP props; 1,920 hp; 2 150-kw electric auxiliary drive motors

Remarks: 751 grt, 250 dwt. Able to link via chain drag for clearance surveys. Have a bow-thruster, 4 precision echo-sounders. Compared to Soviet sisters, have forecastle extended nearly to stern, no buoy-handling capability. Civilian sisters Planeta (launched 21-5-82) and Zodiak (launched 28-8-82) are subordinated to the Maritime Agency, Szczecin. Also sisters in Soviet and East German navies.

1 Soviet Moma class

Bldr: Polnocny SY, Gdansk (In serv. 1973)

KOPERNIK



Kopernik — with seismic survey gear streamed

D: 1,260 tons (1,540 fl) S: 17 kts Dim: 73.3 × 10.8 × 3.8 Electron Equipt: Radar: 2/RN-231

M: 2 Zgoda-Sulzer 6TD48 diesels; 2 CP props; 3,600 hp Endurance: 35 days Range: 8,700/11 Man: 56 tot.

REMARKS: Sisters in Bulgarian and Yugoslav navies. Piast-class salvage ships and Wodnik-class training ships are very similar. Two others, the Nawigator and Hydrometr, serve as intelligence collectors. The Kopernik has 35 m2 of laboratory deck area and has been modified for use in seismic survey, oil exploration work.

AUXILIARY SHIPS

* 3 Moskit-class coastal oilers Bldr: Poland (In serv. 1971-72)

Z 3 Krab Z 8 MEDUSA Z 9 SLIMAK



Medusa (Z 8)

D: 1,200 tons (fl) S: 10 kts Dim: 57.7 (54.0 pp) × 9.5 × 3.4 A: 4/25-mm AA (II × 2) Electron Equipt: Radar: 1/RN-231 M: 2 Cegielski-Sulzer diesels; 2 CP props; 850 hp Man: 12 tot.

Remarks: Cargo: 800 tons. Guns occasionally removed.

◆ 3 Type 5-class coastal oilers (In serv. early 1960s)

Z 6

D: 625 tons (fl) S: 9 kts Dim: 44.2 × 6.5 × 3.0 M: 1 diesel; 1 prop; 300 hp Range: 1,200/9 Man: 16 tot.

Remarks: Cargo: 280 tons. Can carry 2/25-mm AA (II × 1).

2 Piast-class salvage ships

Bldr: Polnocny SY, Gdansk

281 Piast (In serv. 30-11-74)

282 LECH (In serv. 1975)



Piast (281)

R. Neth. Navy, 1982

D: 1,560 tons (1,732 fl) S: 16.5 kts Dim: 73.2 (67.2 pp) × 10.8 × 4.0 Electron Equipt: Radar: 2/RN-231

M: 2 Cegielski-Sulzer 6TD48 diesels; 2 CP props; 3,600 hp Range: 3,000/12

REMARKS: Variation of Moma design for salvage and rescue duties. Equipped to mount eight 25-mm AA in wartime (II × 4). Carry submarine rescue bell to port, can tow, and have extensive pump and fire-fighting facilities. Sister Otto von Guericke is in the East German Navy.

Note: A new "salvage tug" named Gniewko was reported commissioned 29-8-81; no data available.

♦ 3 Mrovka-class degaussing/deperming tenders (In serv. 1970-71)

SD 11WRONA

SD 12 N.

SD 13 N.



SD 12

D: 550 tons (fl) S: 9 kts Dim: 44.6 × 8.2 × 3.0 M: 1 diesel; 1 prop; 300 hp Man: 20 tot.

Remarks: Provision for 2/25-mm AA (II × 2) on forecastle.

INTELLIGENCE COLLECTORS

 2 modified Moma class Bldr: Polnocny SY, Gdansk, (In serv. 1975-76) 262 NAWIGATOR 263 Hydrometr



Hydrometr

1978

Remarks: Data as for hydrographic ship Kopernik above. Crane removed, superstructure lengthened, lattice mainmast as on Piast class, two large radomes. Euphemistically described as "navigational training ships." Provision for mounting 8/25-mm AA (II × 4), 2 fwd., 2 aft.

Note: B-10 trawler-class intelligence collector Baltyk was stricken 12-82.

TRAINING SHIPS

 2 Wodnik class Bldr: Polnocny SY, Gdansk 251 WODNIK (L: 29-11-75) 252 GRYF (L: 13-3-76)



Gryf (252)

Skyfotos, 7-82

D: 1,800 tons (fl) S: 16.8 kts Dim: 74.0 × 13.0 × 4.2 A: 4/30-mm AA (II × 2) -4/25-mm AA (II × 2) Electron Equipt: Radar: 2/RN-231, 1/Drum Tilt M: 2 Cegielski-Sulzer 6TD48 diesels; 2 CP props; 3,600 hp Range: 7,500/11 Man: 60 men + 13 instructors and 87 cadets

REMARKS: Nearly identical to the East German Navy's Wilhelm Pieck and similar to the Luga and Oka in the Soviet Navy. Developed from the Moma design. Have latest navigational systems from the West and the U.S.S.R.

 4 Bryza class Bldr: Wisla SY

In serv. In serv. K 18 BRYZA 1965 712 KADET 19-7-75 713 ELEW 711 Podchorazy 30-11-74

D: 147 tons (180 fl) S: 10 kts Dim: 26.8 × 6.8 × 1.8

Electron Equipt: Radar: 2/RN-231 M: 2 diesels; 2 props; 300 hp Electric: 84 kw Range: 1,100/10 Man: 11 men, 26 midshipmen

Remarks: Bryza, with a less elaborate superstructure, displaces 167 tons (fl). This class also widely employed by Soviet naval schools and Merchant Marine schools for navigation and seamanship training.

TRAINING SHIPS (continued)



Podchorazy (711)

1976

• 1 sail-training craft

Bldr: Gdynia SY (In serv. 11-8-82)

ISKRA II

D: 341 tons S: . . . Dim: . . . × . . . × M: 1 diesel; 1 prop; . . . ; ketch-rigged

Remarks: Can accommodate 40 cadets. The much larger sail-training ship Dar Mlodziezy, also completed in 1982, is civilian-subordinated. The old naval sail-training ship Iskra, renamed Iotka, survives as a youth training craft.

MISCELLANEOUS SERVICE CRAFT

* 2 Pajak-class torpedo retrievers

Bldr: Gdynia SY (In serv. 1971)

K 8 KORMORAN I K 11 KORMORAN II

D: 130 tons (fl)
 S: 21 kts
 Dim: 38.0 × 6.0 × 1.6
 Man: 18 tot.
 A: 2/25-mm AA (II × 1)
 M: 2 M50-F4 diesels; 2 props; 2,400 hp

♦ 2 (+ . . .) Bucha-class harbor tugs (In serv. 1981-. . .)

H4 H7

D: 310 tons (fl) S: 11 kts Dim: $26.3 (25.4 \text{ pp}) \times 7.0 \times 3.0$ Electron Equipt: Radar: 1/SRN-206 Electric: 76 kw M: 1 Cegielski-Sulzer 6AL 20/24 H diesel; 1 CP prop; 760 hp Fuel: 20 tons Man: 7 tot.

Remarks: Class also built for civil use. Bollard pull: 10 tons

3 Motyl-class tugs
 Bldr: Polnocny SY, Gdansk (In serv. 1962-66)

H 12 H 19 H 20



Motyl-class tug H 20

1974

D: 500 tons (fl) S: 12.8 kts Dim: 31.6 (28.6 pp) × 8.4 × 3.5 M: 1 Zgoda-Sulzer 5TD48 diesel; 1 prop; 1,500 hp Electric: 150 kw Fuel: 20 tons Range: 2,000/12.8 Man: 20 tot.

♦ 7 Goliat-class harbor tugs Bldr: Gdynia SY (In serv. early 1960s)

H 5 H 13-18

D: 150 tons (fl) S: 12 kts Dim: 21.4 × 6.1 × 2.6 Man: 5 tot. M: 1 Buckau-Wolff 8 NVD 36 diesel; 1 prop; 300 hp Range: 300/9

♦ 2-4 K-15-class mooring buoy tenders

D: 40 tons (fl) S: 10 kts Dim: 17.8 (15.2 pp) × 4.2 × 1.5 M: 1 diesel; 1 prop; 150 hp Man: 5 tot.

• 6 R 34-class mooring buoy tenders

D: 58.5 tons (64.5 fl) S: 11 kts Dim: 16.8 × 5.5 × 2.4 M: 1 diesel; 1 prop; 300 hp

• 1 research submersible

Bldr: Paris Commune SY (In serv. 1982)

GEONUR II

D: 34 tons (67 submerged fl) S: . . . Dim: 9.5 × 4.4 × 3.5 (height)

Remarks: Operated jointly by the Navy and the Institute of Baltic Geodesy. Diving depth: 150 m.

BORDER GUARD (WOP)

PATROL BOATS

• 5 Obluze class

Bldr: Oksywie SY (In serv. 1965-68)

321 - 325



Polish Border Guard Obluze - (old number)

D: 150 tons (fl) S: 24 kts Dim: 41.0 × 6.0 × 2.1 A: 4/30-mm AA (II × 2) — 4 d.c. racks (2 internal)

Electron Equipt: Radar: 1/RN-231 Sonar: Tamir-11

IFF: 1/Square Head, 1/High Pole A

M: 2 Type 40D diesels; 2 props; 5,000 hp

Remarks: Two have no 30-mm AA mount aft. Five additional units with Drum Tilt fire-control radars for the 30-mm AA serve in the Polish Navy.

• 9 Gdansk class

Bldr: Oksywie SY (In serv. 1962-64)

311 through 319



Gdansk class 317

1978

D: 180 tons (200 fl) S: 18 kts Dim: 41.0 × 5.8 × 1.9 A: 2/37-mm AA (I × 2) − 2/12.7-mm mg (II × 1) − 2 d.c. racks Electron Equipt: Radar: 1/RN-231

Sonar: Tamir-11 M: 2 diesels; 2 props; 2,400 hp

PATROL CRAFT

• 17 Pilica class

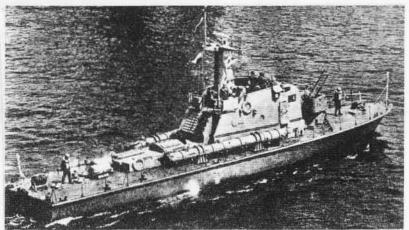
Bldr: Poland (In serv. 1973-. . .)

KP 161 to KP 177



Pilica - without torpedo tubes, old number

POLAND (continued) PATROL CRAFT (continued)



Pilica - with 2/533-mm TT

S. Breyer, 1979

D: 100 tons (fl) **S:** 24 kts **Dim:** $29.2 \times 6.0 \times 1.4$ **A:** 2/25-mm AA (II \times 1) — 2/533-mm TT

Electron Equipt: Radar: 1/RN-231 IFF: 1/High Pole A M: 3 M50-F4 diesels; 3 props; 3,600 hp Man: 15 hp

Remarks: All but the first three have had two 533-mm torpedo tubes added.

♦ 12 Wisloka class

Bldr: Poland (In serv. early 1970s)

KP 141-152



Wisloka class

S. Breyer, 1979

D: 45 tons (fl) **S:** 14 kts **Dim:** $22.8 \times 5.0 \times 1.1$

A: 2/14.5-mm mg (II × 1) Electron Equipt: Radar: 1/navigational

M: 2 diesels; 2 props; 600 hp Man: 10 tot.

♦ 21 K-15-class harbor craft

Bldr: Poland (In serv. early 1960s)

KP 108-128

D: 40 tons S: 10 kts Dim: 17.8 × 4.2 × 1.5

A: Small arms M: 1 diesel; 1 prop; 300 hp Man: 5 tot.

PORTUGAL

Portuguese Republic

Personnel (1985): 15,555, including 2,600 Marines

MERCHANT MARINE (1984): 359 ships - 1,571,007 grt

(tankers: 20 ships - 1,028,890 grt)

Naval Aviation: There is no aviation arm per se, but eight Air Force Casa 212 Aviocar light transports (four with photo equipment) are equipped for maritime reconnaissance duties. Six ex-Australian P-3B Orions, refurbished by Lockheed, purchased 1985.

Bldr: Dubigeon, Normandy

SUBMARINES

3 Danhné class

| · O Dupline class | apine ciass Dian. Dangeon, | | idildy |
|-------------------|----------------------------|----------|----------|
| | Laid down | L | In serv. |
| S 163 Albacora | 6-9-65 | 15-10-66 | 1-10-67 |
| S 164 BARRACUDA | 19-10-65 | 24-4-68 | 4-5-68 |
| S 166 DELFIM | 14-5-67 | 23-9-68 | 1-10-69 |
| | | | |



Albacora (S 163)

G. Gyssels, 10-84

D: 869 surf. f.l./1,043-sub. tons **S**: 13.5/16 kts **Dim**: $57.75 \times 6.76 \times 4.56$

A: 12/550-mm TT (8 fwd, 4 aft, no reloads)

Electron Equipt: Radar: 1/DRUA-31—EW: ARUR, ARUD Sonar: DUUA-1 active, DSUV passive

M: Diesel-electric propulsion: SEMT-Pielstick 12PA1 diesels (450 kw); 2 props; 1,200 hp

Range: 4,300/7.5 snorkel Man: 5 officers, 45 men

Remarks: See remarks on the *Daphné* class in the French section. Sister *Cachalote* (S 165) was purchased by the Pakistani Navy in 1975.

FRIGATES

♦ 0 (+3) MEKO 200 design Bldrs: Blohm + Voss, Hamburg; Howaldtswerke

| | Laid down | L | In ser |
|-----|-----------|-------|--------|
| F N | | * * * | |
| F N | | | |
| F N | | | |

D: 2,000 tons (2,400 fl) S: 28 kts Dim: 95.00 (88.00 pp) × 11.80 × 3.60 (hull)
A: 8/Harpoon SSM (IV × 2) — 1/Mk 29 SAM launcher (VIII × 1; Sea Sparrow missiles) — 1/127-mm Mk 45 Mod. 1 DP — 2 or 3 CIWS AA gunmounts —

6/324-mm Mk 32 ASW TT-1/. . . helicopters

Electron Equipt: Radar:

Sonar: SQS-505

EW:

M: 4 MTU 20V1163 TB93 diesels; 2 CP props; 22,536 hp

Range: 4,000/20 Fuel: 380 tons Electric: 144 kw Man: 123 tot.

Remarks: Similar to Turkish Navy units under construction. Portugal paying only small percent of costs; most borne by NATO partners U.S., West Germany, Canada, and Norway. Ordered 10-85 from consortium of builders plus Thyssen Rheinstall Technik and Ferrostal. Will have U.S.-supplied electronics, plus some Canadian and Norwegian equipment.

4 Baptiste de Andrade class Bldr: Bazán, Spain

| | Laid down | L | In serv. |
|---------------------------|-----------|---------|----------|
| F 486 BAPTISTE DE ANDRADE | 1972 | 3-73 | 19-11-74 |
| F 487 João Roby | 1972 | 3-6-73 | 18-3-75 |
| F 488 Afonso Cerqueira | 1973 | 6-10-73 | 26-6-75 |
| F 489 OLIVEIRA E. CARMO | 1973 | 2-74 | 2-76 |



Afonso Cerqueira (F 488)

L. & L. Van Ginderen, 1983



Oliveira E. Carmo (F 489)

L. & L. Van Ginderen, 3-82

D: 1,252 tons (1,348 fl) **S:** 21 kts **Dim:** 84.59 (81.0 pp) \times 10.3 \times 3.3 **A:** 1/100-mm DP, French Model 1968—2/40-mm AA (I \times 2)—6/324-mm Mk 32

ASW TT (III × 2) — 1/d.c. rack Electron Equipt: Radar: 1/Decca TM626, 1/Plessey AWS-2, 1/Thomson-CSF Pollux

Sonar: Diodon

FRIGATES (continued)

M: 2 OEW-Pielstick 12PC2V400 diesels; 2 props; 10,560 hp Electric: 1,110 kVA Range: 5,900/18 Man: 113 tot.

Remarks: Developed version of the *João Coutinho* class with more modern weapons and electronics. Helicopter platform. Vega GFCS with CSEE Panda optical backup director for 100-mm gun, 2 directors for 40-mm.

♦ 6 João Coutinho class to F 471: Bazán, Spain

Bldrs: F 475 to F 477: Blohm + Voss, Germany; F 484

| | Laid down | L | In serv. |
|-----------------------------|-----------|---------|----------|
| F 475 João Coutinho | 9-68 | 2-5-69 | 7-3-70 |
| F 476 Jacinto Candido | 4-68 | 16-6-69 | 10-6-70 |
| F 477 GENERAL PEREIRA D'ECA | 10-68 | 26-7-69 | 10-10-70 |
| F 484 Augusto Castilho | 8-68 | 5-7-69 | 14-11-70 |
| F 485 Honorio Barreto | 7-68 | 11-4-70 | 15-4-71 |
| F 471 Antonio Enes | 4-68 | 1-8-69 | 18-6-71 |



João Coutinho (F 475)

Portuguese Navy



Jacinto Candido (F 476)

G. Gyssels, 9-81

D: 1,252 tons (1,401 fl) S: 24.4 kts Dim: 84.59 (81.0 pp) \times 10.30 \times 3.30 A: 2/76.2-mm Mk 33 DP (II \times 1) — 2/40-mm AA (II \times 1) — Mk 10 Hedgehog — 2/Mk 6 d.c. projectors—2/Mk 9 d.c. racks

Electron Equipt: Radar: 1/Decca TM 626, 1/MLA-1B, 1/SPG-34 Sonar: 1/QCU-2

M: 2 OEW-Pielstick 12PC2V280 diesels; 2 props; 10,560 hp Electric: 900 kw Range: 5,900/8 Man: 9 officers, 84 men

REMARKS: Can carry 34 Marines. Have Mk 63 Mod. 21 GFCS for the 76.2-mm mount, Mk 51, Mod. 2 GFCS for the 40-mm. Modernization planned. Carry 1,200 rounds 76.2-mm, 240 Hedgehog projectiles, and up to 84 d.c.

♦ 4 French Commandant Rivière class

Bldr: A.C. de Bretagne, Nantes

| | Laid down | L | In serv. |
|------------------------------------|-----------|----------|----------|
| F 480 COMANDANTE JOÃO BELO | 6-9-65 | 22-3-66 | 1-7-67 |
| F 481 COMANDANTE HERMEGILDO CAPELO | 13-5-66 | 29-11-66 | 26-4-68 |
| F 482 Comandante Roberto Ivens | 13-12-66 | 11-8-67 | 23-11-68 |
| F 483 COMANDANTE SACADURA CABRAL | 18-8-67 | 15-3-68 | 25-11-69 |

D: 1,760 tons (2,250 fl) S: 25 kts (26.6 max.)

Dim: 103.0 (98.0 pp) × 11.5 × 3.8

A: 3/100-mm DP, Model 1953 (I \times 3) — 2/40-mm AA (I \times 2) — 1/305-mm ASW mortar (IV \times 1) — 6/550-mm ASW TT (III \times 2)

Electron Equipt: Radar: 1/Decca RM 316, 1/DRBV-22A, 1/DRBV-50, 1/DRBC-31D



Comandante Roberto Ivens (F 482)

L. & L. Van Ginderen, 3-85



Comandante João Belo (F 480)

L. & L. Van Ginderen, 7-84

Remarks: See remarks on Commandant Rivière class in French section. Modernization deferred, but will receive new sonars and EW gear in near future.

• 3 U.S. Dealey class Bldrs: F 472 and F 473: Est. Nav. Lisnave, Lisbon; F 474: Est. Nav. de Viana do Castelo

| | Laid down | L | In serv. |
|----------------------------------|-----------|---------|----------|
| F 472 Almirante Pereira Da Silva | 14-6-62 | 2-12-63 | 20-12-66 |
| F 473 Almirante Gago Coutinho | 2-12-63 | 13-8-65 | 29-11-67 |
| F 474 Almirante Magalhaes Correa | 30-8-63 | 26-4-65 | 4-11-68 |



Almirante Magalhaes Correa (F 474)

G. Gyssels, 8-82

D: 1,450 tons (1,950 fl) S: 26 kts Dim: 95.86 (93.88 wl) \times 11.18 \times 4.04 (hull) A: 4/76.2-mm DP (II \times 2) — 2/375-mm Bofors ASW RL (IV \times 2) — 6/324-mm Mk 32 ASW TT (III \times 2)

Electron Equipt: Radar: 1/Decca RM 316P, 1/978, 1/MLA-1B, 2/Mk 34 Sonar: SQS-30/31/32, DUBA-3A, 1/SQA-10 (VDS) EW: WLR-1

M: 1 set GT; 1 prop; 20,000 hp Electric: 700 kw

Boilers: 2 Foster-Wheeler, 42 kg/cm², 510°C Fuel: 360 tons Range: 1,600/25; 4,400/11 Man: 11 officers, 154 men

REMARKS: Funded as U.S. DE 1039, DE 1042, and DE 1046, respectively. Two Mk 63 gunfire-control systems. Search sonars are SQS-30, SQS-31, and SQS-32, respectively, to avoid frequency interference. Two are to be converted to perform 200-n.m. economic zone patrol and search-and rescue duties.

PATROL BOATS

◆ 10 Cacine class (Launch dates in parentheses)

| P 1140 CACINE (1968) | P 1144 Quanza (30-5-69) | Р 1160 Lімроро (9-4-73) |
|-----------------------|-------------------------|-------------------------|
| P 1141 CUNENE (1968) | Р 1145 СЕВА (21-5-69) | P 1161 SAVE (24-10-72) |
| P 1142 Mandovi (1968) | P 1146 ZAIRE (28-11-70) | |
| P 1143 ROVUMA (1968) | P 1147 ZAMBEZE (1971) | |



Mandovi (P 1142)

L. & L. Van Ginderen, 1983

Bldrs: P 1140 to 1143: Arsenal do Alfeite; others: Est. Nav. do Mondego

D: 292 tons (310 ft) **S:** 20 kts **Dim:** $44.0 \times 7.67 \times 2.2$ **A:** 2/40-mm AA ($I \times 2$) — 1/20-mm AA — 2/d.c. racks

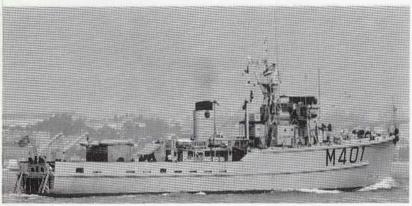
Electron Equipt: Radar: 1/975 M: 2 Maybach 12V538 diesels; 2 props; 4,400 hp

Range: 4,400/12 Man: 3 officers, 30 men

PATROL BOATS (continued)

• 4 São Roque-class former minesweepers Bldr: Estaleiros Navais da C.U.F., Lisbon

In serv. M 401 São Roque 6-6-56 M 403 Lagoa 10-8-56 M 402 Ribeira Grande 8-2-57 M 404 Rosario 8-2-56



São Roque (M 401)

L. & L. Van Ginderen, 1983

D: 394 tons (452 fl) S: 15 kts Dim: 46.33 (42.69 pp) × 8.75 × 2.5 A: 1/20-mm AA M: 2 Mirrlees JVSS-12 diesels; 2 props; 2,500 hp Fuel: 45 tons Range: 2,300/13; 3,000/8 Man: 4 officers, 43 men

Remarks: All portable sweep gear offloaded; now used as patrol vessels. Ordered early in 1954 and all launched in 1955. M 401 and M 403 built with U.S. "Offshore" funds as MSC 241 and MSC 242. Similar in appearance to the British "Ton" class. Wooden hulls, fin stabilizers. One 40-mm AA removed in 1972.

PATROL CRAFT

◆ 4 glass-reinforced plastic hulled Bldr: Cheverton, Cowes, U.K.

Bonanca Mar Chao Mar Eta Surriada

D: 9 tons (fl) S: 20 kts Dim: 12.0 × 3.6 × 1.0

A: Small arms Electron Equipt: Radar: 1/Decca 110

M: 2 Volvo Penta TAMD 66B outdrive diesels; 2 props; 426 hp

Man: 4 tot.

Remarks: First pair delivered 5-82, others in 7-82. Intended to patrol on the Tagus in the Lisbon area.

♦ 6 Albatroz class Bldr: Arsenal do Alfeite (In serv. 1974-75)

P 1162 Albatroz P 1164 Andorhina P 1166 Condor P 1163 Acor P 1165 Aguia P 1167 Cisne



Condor (P 1166)

L. & L. Van Ginderen, 1981

D: 45 tons (fl) S: 20 kts Dim: 23.6 (21.88 pp) × 5.25 × 1.6

A: 1/20-mm AA — 2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 2 Cummins diesels; 2 props; 1,100 hp Range: 450/18; 2,500/12 Man: 8 tot.

◆ 1 Dom Aleixo class Bldr: San Jacintho Aveiro (L: 12-67)

P 1148 Dom Aleixo



Dom Aleixo (P 1148)

D: 62.6 tons (67.7 fl) S: 16 tons Dim: 25.0 × 5.2 × 1.6 A: 1/20-mm Electron Equipt: Radar: Decca RM 316P

M: 2 Cummins diesels; 2 props; 1,600 hp Man: 2 officers, 8 men

Remarks: Sister Dom Jeremias (A 5202, ex-P 1149) is used as an inshore survey craft,

AMPHIBIOUS WARFARE CRAFT

• 2 Bombarda-class landing craft

Bldr: Mondego SY

LDG 201 BOMBARDA (In serv. 1969)

LDG 202 Alabarda (In serv. 1971)

LDG 203 BACAMARTE (In serv. 12-85)



Bombarda (LDG 201)

1983

D: 285 tons (635 fl)
 S: 11 kts
 Dim: 59.0 (52.88 pp) × 11.91 × 1.6
 M: 2 MTU MD 225 diesels; 2 props; 1,000 hp
 Range: 1,800/8
 Man: 2 officers, 18 men

• 6 LDM 400-class landing craft (In serv. 1967)

LDM 406 LDM 420 LDM 422 LDM 418 LDM 421 LDM 423

D: 56 tons (fl) S: 9 kts Dim: $17.0 \times 5.0 \times 1.2$ A: 1/20-mm M: 2 Cummins diesels; 2 props; 450 hp

REMARKS: Resemble British LCM(7) class. LDM 424 stricken 1982.

• 3 LDM 100-class landing craft Bldr: Mondego SY (In serv. 1965)

LDM 119 LDM 120 LDM 121

D: 50 tons (fl) **S:** 9 kts **Dim:** 15.25 × 4.37 × 1.17 **M:** 2 G.M. 6-71 diesels; 2 props; 450 hp **Range:** 130/9

REMARKS: U.S. LCM(6) class.

HYDROGRAPHIC SHIPS

◆ 0 (+1) new construction Bldr: Alfeite Navy Yard

Laid down L In serv.

M: Diesels: . . . props; 1,700 hp

Remarks: Intended to replace the U.K. "Bay"-class survey ship Alfonso de Albuquerque (A 526), stricken 1983. Not yet begun. A second new survey unit is also planned.

♦ 1 ex-U.S. Kellar class Bldr: Marietta SB Co., Pt. Pleasant, W. Va.

Laid down L In serv. A 527 Almeida Carvalho (ex-Kellar, T-AGS 25) 20-11-62 30-7-64 31-1-69



Almeida Carvalho (A 527)

L. & L. Van Ginderen, 1983

D: 1,297 tons (fl) S: 13.5 kts Dim: 63.50 (58.00 pp) \times 11.90 \times 4.32 Electron Equipt: 1/RCA CRM-N2A-30, 1/Decca TM 829

M: 2 Caterpillar D-378 diesels, electric drive; 1 prop; 1,000 hp

Fuel: 211 tons Man: 5 officers, 25 men

Remarks: Transferred on loan 21-1-72. Similar to U.S. Robert D. Conrad-class T-AGOR. Sister S.P. Lee is operated by the United States Geological Survey.

◆ 1 inshore survey craft
 Bldr: San Jacintho Aveiro (L: 12-67)

A 5202 Dom Jeremias (ex-P 1149)

Remarks: Data as for patrol craft sister Dom Aleixo. Retains the 20-mm AA gun.

HYDROGRAPHIC SHIPS (continued)



Dom Jeremias (A 5202)

L. & L. Van Ginderen, 7-84

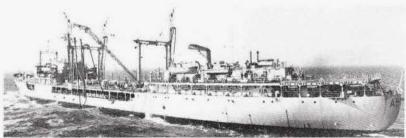
AUXILIARY SHIPS

1 replenishment oiler

Bldr: Est. Nav. de Viana do Castelo

A 5206 São Gabriel

1961



São Gabriel (A 5206) - fueling boom rigged out

Portuguese Navy

D: 9,000 tons (14,200 fl) **S:** 17 kts **Dim:** 146.0 (138.0 pp) \times 18.22 \times 8.0 Electron Equipt: Radar: 1/Decca RM 1226C, 1/Decca RMS 1230C, 1/SPS-6C M: 1 set Pamtreda GT; 1 prop; 9,500 hp Boilers: 2 Range: 6,000/15 Man: 9 officers, 93 men

Remarks: 9,854 grt/9,000 dwt. Two liquid- and one solid-store replenishment stations per side. Helicopter platform aft. Former oiler Sam Bras is now an accommodations

• 1 lighthouse tender and tug

A 54 SCHULTZ XAVIER

Laid down 2-70 1972 14-7-72



Schultz Xavier (A 54)

J.-C. Bellonne, 1973

D: 900 tons S: 14 kts Dim: 56.1 × 10.0 × 3.8 M: 2 diesels; 1 prop; 2,400 hp Range: 3,000/12.5 Man: . .

Remarks: Reported to be in reserve.

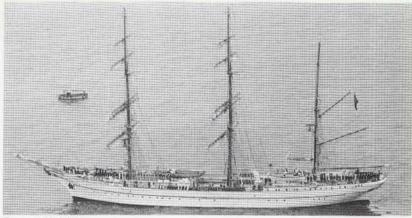
• 1 sail-training ship Bldr: Blohm + Voss, Hamburg

In serv A 520 Sagres (ex-Guanabara, ex-Albert Leo Schlageter) 30-10-37 1 - 2 - 38

D: 1,725 tons (1,784 fl) S: 10.5 kts (18 sail) Dim: 90.0 (75.90 hull, 70.4 pp) × 11.9 × 5.2

M: 2 M.A.N. diesels; 1 prop; 750 hp Range: 5,450/7.5 (power) Man: 10 officers, 143 men

Remarks: Acquired by U.S. Navy as reparations, 1945; sold to Brazil in 1948 and to Portugal in 1972, commissioning on 2-2-72. Sail area: 2,355 m². Sisters are U.S. Coast Guard Eagle and Soviet Tovarisch.



Sagres (A 520)

• 1 sail-training sloop (In serv. . . .)

A 5201 VEGA (ex-Arreda)

D: 60 tons **S:... Dim:** $19.8 \times 4.3 \times 2.5$

♦ 1 sail-training yacht (In serv. . . .)

A 5204 POLAR (ex-Anne Linde)

D: 70 tons S: . . . Dim: 22.9 × 4.9 × 2.5

SERVICE CRAFT

♦ 1 U.S. 174-foot-class yard oiler

Bldr: Brunswick Marine, Georgia

Laid down

In serv.

UAM 303 OEIRAS (ex-BC-3, ex-YO 194)

14-5-45

25-8-45



Oeiras (UAM 303) - in light condition (old number) L. & L. Van Ginderen, 1983

D: 440 tons light (1,390 fl) **S**: 11 kts **Dim**: $53.04 \times 9.75 \times 3.96$

M: 1 G.M. diesel; 1 prop; 800 hp Electric: 120 kw

Fuel: 25 tons Man: 23 tot.

Remarks: Transferred in 4-62. Cargo: 924 tons.

2 small yard oilers

UAM 301 ODELEITE UAM 302 ODIVELAS

Remarks: Cargo: 674 tons; no other data available. *

• 1 river navigational buoy tender

Bldr: San Jacintho Aveiro

UAM 675 Guia (In serv. . . .)

D: 70 tons S: 8.5 kts Dim: 22.0 × 7.9 × 2.2

M: 1 Deutz SBA 6M 816U diesel; 1 Schöttel prop; 350 hp — 1 Harbor Master 50 F76 maneuvering unit (3.5 kts)

♦ 1 ex-U.S. Army harbor tug

UAM 614 NISA (ex-RB 2, ex-ST 1996)

Remarks: Transferred 2-3-62 from U.S. Navy, Sister RB 1 stricken 1984

♦ 1 yacht/tender Bldr: Halmatic, U.K. (In serv. 10-84)

UAM 901 ALVA

D: 6.5 tons (fl) **S:** 20 kts **Dim:** $10.62 (9.37 \text{ wl}) \times 3.50 \times 0.84$ M: 2 Volvo TAMD 60C diesels; 2 props; 420 hp

Remarks: Glass-reinforced plastic construction. Used as C-in-C's yacht. Carries 12

7 miscellaneous harbor launches

UAM 907 COURA UAM 908 Paiva

UAM 909 SORRAIA UAM 910 TAMEGA UAM 911 Tua UAM 912 Vascão

UAM 913 ZEZERE

REMARKS: Majority intended to ferry personnel in Lisbon area. The craft shown below is from the above group, but names/numbers cannot be correlated.

PORTUGAL (continued) SERVICE CRAFT (continued)



ex-YFB 5

L. & L. Van Ginderen, 1983

ATAR

Personnel (1985): 400 total

Merchant Marine (1984): 61 ships - 332,907 grt

(tankers: 4 ships - 76,776 grt)

AVIATION: At least 3 SH-3D Sea King helicopters are in service for search-and-rescue

GUIDED-MISSILE PATROL BOATS

♦ 3 French Combattante III class Bldr: CMN, Cherbourg

| | Laid down | L | In serv. |
|------------------|-----------|----------|----------|
| Q 01 Damsah | 6-5-81 | 17-6-82 | 10-11-82 |
| Q 02 AL GHARIYAH | 26-8-81 | 23-9-82 | 10-2-83 |
| Q 03 RBIGAH | 27-10-81 | 22-12-82 | 11-5-83 |

D: 395 tons (430 ft) S: 38.5 kts

Dim: 56.0 (53.0 pp) × 8.16 × 2.15 hull (2.5 max.)

A: 8/MM 40 Exocet SSM — 1/76-mm OTO Melara DP — 2/40-mm Breda AA (II × 1) — 4/30-mm Emerlec AA (II × 2)

Electron Equipt: Radar: 1/Decca 1226, 1/Thomson-CSF Pollux, 1/Thomson-

CSF Castor, EW: . . . passive, Dagaie chaff RL

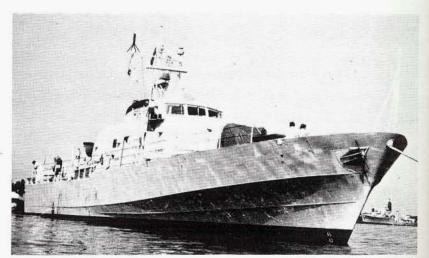


M: 4 MTU 20V538 TB93 diesels; 4 props; 19,300 hp Range: 2,000/15

REMARKS: Ordered 10-80. Very similar in appearance and equipment to the three Nigerian units of the class. Two CSEE Panda optical gun directors.

PATROL BOATS AND CRAFT

| • 6 103-foot boats | Bldr: Vosper Thornycroft, Portchester | | | |
|--------------------|---------------------------------------|----------------------|----------|--|
| | In serv. | | In serv. | |
| Q 11 BARZAN | 13-1-75 | Q 14 AL WUSSAIL | 28-10-75 | |
| Q 12 Hwar | 30-4-75 | Q 15 FATEH AL KHATAB | 22-1-76 | |
| Q 13 That Assuari | 3-10-75 | Q 16 Tariq | 1-3-76 | |



Fateh Al Khatab (Q 15)

L. & L. Van Ginderen, 1976



Damsah (Q 01)

QATAR (continued)

PATROL BOATS AND CRAFT (continued)

D: 120 tons **S:** 27 kts **Dim:** 32.4 (31.1 pp) \times 6.3 \times 1.6

A: 2/30-mm AA (II × 1) - 1/20-mm AA

M: 2 Paxman Valenta 16RP200 diesels; 2 props; 6,250 hp Man: 25 tot.

 4 Tracker Mk II class Bldr: Fairey Allday Marine, Hamble, U.K. (In serv. 1984)

Q 31 Q 32 Q 33 Q 34



Q 32 and a sister

L. & L. Van Ginderen, 1984

D: 34 tons (fl) **S:** 24 kts **Dim:** $20.0 \times 5.2 \times 1.5$ A: . . . Electron Equipt: Radar: 1/Decca . . . M: 2 G.M. 12V71 TI diesels; 2 props; 1,300 hp

Range: 650/20 Man: 11 tot.

Remarks: Ordered 2-83. Glass-reinforced plastic construction.

♦ 7 P 1200 class Bldr: Watercraft, Shoreham, U.K. (In serv. 1980)

D: 12.7 tons (fl) **S**: 29 kts **Dim**: $11.9 \times 4.1 \times 1.1$

A: 2/7.62-mm mg (I × 2)

M: 2 Wizeman-Mercedes WM400 diesels; 2 props; 660 hp Man: 4 tot.

♦ 2 45-foot craft Bldr: Vosper/Keith Nelson

D: 13 tons S: 26 kts Dim: 13.5 × 3.8 × 1.1

A: 1/12.7-mm mg — 2/7.62-mm mg (I × 2)

M: 2 Caterpillar diesels; 2 props; 800 hp Man: 6 tot.

◆ 25 Spear-class craft Mk I and Mk II Bldr: Fairey Marine, Hamble, U.K. (In serv. 1974-77)

Q 71-Q 95

D: 4.3 tons S: 26 kts Dim: 9.1 × 2.8 × 0.8

A: 3/7.62-mm mg (I × 3) M: 2 diesels; 2 props; 290 hp Man: 4 tot.

Remarks: First seven delivered 19-6-74 to 2-75; five more ordered 12-75; three more delivered 30-6-75 to 14-7-75. Ten more delivered 4-77.

♦ 2 Interceptor class Bldr: Fairey Marine, Hamble, U.K. (In serv. 28-11-75)

D: 1.25 tons **S**: 35 kts **Dim**: $7.9 \times 2.4 \times 0.9$

M: 2 Johnson outboards; 270 hp Range: 150/30 Man: 3 crew + 10 troops

ROMANIA

Socialist Republic of Romania

Personnel (1984): 6,700 men, 900 of whom are in the Border Guard

MERCHANT MARINE (1984): 393 ships - 2,666,820 grt (tankers: 10 ships - 295,435 grt)

NAVAL AVIATION: Six Soviet Mi-14 Haze A land-based ASW helicopters and several Alouette-III helicopters are in service.

SUBMARINES

Remarks: Romania is known to be attempting to regain its position as a submarine operating power.

DESTROYERS

Bldr: Mangalia SY No. 2 1 Muntenia (In serv. 8-85)

MUNTENIA

Remarks: Length: 145 m; no other data available; reported laid down in 1981 and launched by 1983. See addenda for characteristics.

FRIGATES

• 3 Tetal class Bldr: Mangalia SY No. 2

260 N. (In serv. 1983) . . . N. (In serv. 1983) ... N. (In serv. 1985)

D: 1,800 tons (fl) S: . . . kts Dim: 95.1 \times 11.5 \times 3.0 A: 4/76.2-mm DP (II \times 2) — 4/30-mm AA (II \times 2) — 4/. . .-mm ASW TT — 2/RBU-6000 ASW RL (XIII \times 2)

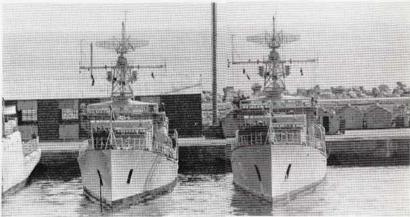
Electron Equipt: . . . M: . .

REMARKS: "Tetal" is the NATO code name for this class. There is a helicopter platform. First unit laid down 1980. Program slowed by economic problems.

CORVETTES

3 ex-Soviet Poti class

V 32



V 32 and V 33 - alongside Cosar-class minelayer 274

1982

D: 400 tons (fl) **S:** 38 kts **Dim:** $59.4 \times 7.9 \times 2.0$ (mean) **A:** 2/57-mm AA (II × 1) — 2/RBU-2500 ASW RL — 2/533-mm ASW TT (I × 2) Electron Equipt: Radar: 1/Don 2, 1/Strut Curve, 1/Muff Cob IFF: 1/High Pole B - EW: 2/Watch Dog

Sonar: Med.-frequency hull-mounted

M: CODAG: 2 M503A diesels (4,000 hp each); 2 GT (20,000 hp each); 2 props Range: 500/37; 4,500/10 Man: 50 tot.

Remarks: Transferred 1970. Have simpler systems than the Soviet units: 533-mm vice 400-mm torpedo tubes. RBU-2500 vice RBU-6000 rocket launchers, etc. Gas turbines force air into tubes abaft the propellers, in a kind of "waterjet" system. The "V" in the pendant number stands for Vanatore (chaser).

♦ 4 Democratia-class ex-minesweepers (German M-40 class) Bldr: Galati (In serv. 1951)

DB 13 DEMOCRATIA DB 14 DESCATUSARIA

DB 15 DESROBIREA DB 16 DREPTATEA

D: 643 tons (775 fl) **S**: 17 kts **Dim**: $62.3 \times 8.5 \times 2.6$

A: 5/37-mm AA (II × 2, I × 1) -4/14.5-mm mg (II × 2) -2/RBU-1200 ASW $RL(V \times 2)$ - mines

Electron Equipt: Radar: 1/Don-2-Sonar: . . . - IFF: High Pole A

M: 2 diesels; 2 props; 12,400 hp

Boilers: 2 three-drum Fuel: 152 tons Range: 4,000/10 Man: 80 tot.

Remarks: Begun for German Navy as coal burners, launched postwar. Converted to burn fuel oil on completion. Recently modernized with new superstructures, diesel engines in place of the original reciprocating steam plant; minesweeping gear deleted, ASW ordnance updated.

GUIDED-MISSILE PATROL BOATS

6 ex-Soviet Osa-I class

195 196 197 198 199 194

D: 185 tons (215 fl) S: 36 kts Dim: 38.6 × 7.6 × 1.8

A: 4/SS-N-2 missile launchers - 4/30-mm AK-230 AA (II × 2)

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole B

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Transferred after 1960.

GUIDED-MISSILE PATROL BOATS (continued)



Romanian Osa-I 196

1974

PATROL BOATS

Bldr: Mangalia SY, Romania (In serv. 1973-. . .) 16 Shanghai-II class VS 41 to VS 44 VP 20 to VP 28, VP 30, VP 31, VP 35



Shanghai IIs VP 27, 28, 31, and 30 with a service craft

D: 123 tons (135 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55

A: VS 41 series: 1/37-mm AA-2/14.5-mm mg (II × 1)-2/RBU-1200 ASW RL $(V \times 2)$ — VP 20 series: 4/14.5-mm mg (II \times 2)

Electron Equipt: Radar: 1/Pot Head

M: 2 M50-F4, 4,200-hp diesels, 2 12D6, 910-hp diesels; 4 props; 4,220 hp Range: 750/16.5 Electric: 39 kw Endurance: 7 days Man: 36 tot.

Remarks: Units with VP pendants serve the Border Guard; some, with only two 14.5mm machine guns and a large deckhouse aft, serve as search-and-rescue boats. VS = Vanatore de Submarin (submarine chaser); VP = Vedette Patrolare (patrol boat).

• 3 ex-Soviet Kronshtadt class

Bldr: U.S.S.R. (In serv. early 1950s)

V 2

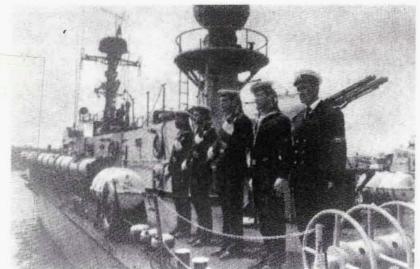
D: 300 tons (330 fl) **S:** 18 kts **Dim:** $52.1 \times 6.5 \times 2.2$

A: 1/85-mm DP—2/37-mm AA M: 3 Type 9D diesels; 3 props; 3,300 hp Fuel: 20 tons Range: 3,500/14 Man: 40 tot.

TORPEDO BOATS

◆ 14 (+. . .) Epitrop class

Bldr: Romania (In serv. 1979-. . .)



Epitrop class

1982

D: 215 tons (fl) S: 36 kts Dim: 38.6 × 7.6 × 1.8

A: 4/30-mm AK-230 AA (II × 2) — 4/533-mm TT (I × 4)

Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt-IFF: 1/High Pole A

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/35; 750/20 Man: 28 tot.

Remarks: Design based on Osa class; "Epitrop" is the NATO nickname for the class. Construction continues, toward an estimated total of 20. Pendant nos. 202-213.

23 Huchuan-class hydrofoils

Bldr: Dobreta SY, Turnu (1973-. . .) .

VT 51 to VT 73



Romanian Huchuan VT 53

1974

D: 39 tons (45 fl) **S:** 50 kts **Dim:** 22.50×6.26 (3.80 deck) \times 1.15 (1.11 foiling)

A: 4/14.5-mm AA (II × 2) - 2/533-mm TT Man: 11 tot. Electron Equipt: 1/Type 756-IFF: 1/High Pole B

M: 3 M50 diesels; 3 props; 3,600 hp Range: 500/30 Electric: 5.6 kw

REMARKS: Three built in China, remainder in Romania. Two, named Jupiter and Marte, have had the torpedo tubes and hydrofoils removed and are used as search-and-rescue craft. VT = Vedette Torpedinare (torpedo boat).

MINE WARFARE SHIPS

♦ 2 Cosar-class minelayers Bldr: Romania (In serv. 1980-82)

271 N. 274 N.



Cosar 274 with corvettes Dreptatea (DB 16) and Desrobirea (DB 15)

D: 1,500 tons (fl) **S:** . . . **Dim:** $79.0 \times 10.6 \times$. . . **A:** 2/57-mm AA (II \times 1) — 4/30-mm AA (II \times 2) — 2/RBU-1200 ASW RL $(V \times 2)$ - mines

Electron Equipt: Radar: 1/navigational, 1 Strut Curve, 1/Muff Cob, 1/Drum Tilt Sonar: . . .

M: Diesels; 2 props; . . . hp

REMARKS: "Cosar" is the NATO nickname. Shares the same hull as the oceanographic research ship Grigore Antipa.

12 ex-Soviet T-301-class minesweepers

DR 6-9, DR 17-20, DR 26-29

D: 145.8 tons (160 fl) S: 12.5 kts Dim: 38.0 × 5.1 × 1.6

A: 1/45-mm AA - 4/12.7-mm mg (II × 2) - mines

M: 3 6-cyl. diesels; 3 props; 1,440 hp

Fuel: 20 tons Range: 2,500/8 Man: 32 tot.

Remarks: Transferred 1956-60. Gradually being disposed of; most probably in reserve or inoperable.

AUXILIARY SHIPS

Bldr: Romania (In serv. 1980) • 1 oceanographic research ship

GRIGORE ANTIPA

D: 1,500 tons (fl) S: . . . Dim: 79.0 × 10.6 × . . .

M: Diesels; 2 props; . . . hp

Remarks: Same hull and propulsion system as Cosar-class minelayers above. Carries a small research submersible.

AUXILIARY SHIPS (continued)

♦ 2 Croitor-class small combatant tenders

Bldr: Romania (In serv. 1980)

281 N. 283 N.



Croitor class No. 281

1982



Croitor 283 - composite photo

1983

D: 3,500 tons (fl) S: . . . kts Dim: $110.0 \times .$. . \times . . . A: 2/57-mm AA (II \times 1 -2/SA-N-5 SAM syst (IV \times 2) -4/30-mm AK-230 AA (II \times 2) -4/14.5-mm mg (II \times 2) -2/RBU-1200 ASW RL (V \times 2)

Electron Equipt: Radar: 1/. . . nav., 1/Strut Curve, 1/Muffcob, 1/Drum Tilt Sonar: . . .—IFF: 1 High Pole A

M: Diesels; 2 props; . . . hp

REMARKS: "Croitor" is the NATO nickname. Resembles a smaller edition of the Soviet "Don" class. Helicopter hangar and flight deck aft. Crane forward of bridge tends magazine for torpedoes and missiles. SA-N-5 rack-launchers mounted atop hangar, with ready-service lockers for 8 missiles.

• 3 coastal tankers (In serv. 1971-73)

TM 530 TM . . . TM . . .

D: 1,300 tons (fl) **S:** 10 kts **Dim:** $60.0 \times 9.2 \times 4.1$

A: 1/37-mm AA -2/12.7-mm mg (I \times 2)

M: 1 diesel; 1 prop; 600 hp

♦ 1 seagoing rescue tug Bldr: Romania (In serv. 1984)

EMII RACOVITA

Remarks: Same hull and propulsion as the Cosar-class minelayers and the oceanographic research ship *Grigore Antipa*.

◆ 2 Soviet Roslavl-class ocean tugs Bldr: Galati SY (In serv. 1953-54)

RM 101 VITEAZUL RM. . . VOINICUL

D: 750 tons (fl) **S:** 11 kts **Dim:** $44.5 \times 9.5 \times 3.5$

M: Diesel-electric; 2 props; 1,200 hp Man: 28 tot.

Remarks: RM = Remorcher de Mare (seagoing tug).



Mirces

French Navy, 1980

♦ 1 sail-training ship Bldr: Blohm + Voss, Hamburg

Laid down L In serv.
MIRCEA 30-4-38 22-9-38 29-3-39

D: 1,630 tons (fl) **S:** 6 kts (10 sail) **Dim:** 81.78 (73.5 hull) \times 12.5 \times 5.2

M: 1 M.A.N. diesel; 500 hp Sail area: 1,750 m²

Man: 20 men + 120 cadets

Remarks: Refitted in Germany, 1966-67.

Note: The training ship Neptun serves the Merchant Marine, not the Navy.

♦ 3 ex-French Friponne-class former minesweepers Bldrs: Lorient and Brest Dockyards (In serv. 1916-17)

NH 111 STIHI (ex-Mignonne)

NH 112 DUMITRESCU (ex-Friponne)

ND 113 Constanta (ex-Ghiculescu, ex-Impatiente)



Dumitrescu (NH 112) - white-painted, behind yard oiler 131

1982

D: 330 tons (443 fl) **S:** 12 kts **Dim:** 60.9 × 7.0 × 2.5

A: 1/37-mm AA - 4/14.5-mm AA (II × 2) - 2/RBU-1200 ASW RL (V × 2)

Electron Equipt: Radar: 2/. . . nav.—Sonar: HF, hull-mounted IFF: 1/High Pole A

M: 2 Sulzer diesels; 2 props; 900 hp

Fuel: 30 tons Range: 3,000/10 Man: 50 tot.

Remarks: ND 113 used as a headquarters ship, the others as survey ships. Recently modernized with streamlined superstructures, new armament, etc. ND 113 is 57.8 m o.a.

YARDCRAFT

• 10 miscellaneous service boats

SRS 571 SRS 572 SRS 573 SRS 577 SRS 675: harbor tugs MM 131 MM 132 MM 133 MM 136 MM 137: fuel lighters

• 4 diving tenders

• 3 accommodations barges

OLTUL IALOMITA SIRETUL

• 6 small floating workshops

• 3 fireboats

AUTOMATICE ELECTRONICA ENERGERICA

D: 160 tons (fl) S: 12 kts Dim: 38.0 × 5.5 × 1.4

M: 2 diesels; 2 props; . . . hp

DANUBE FLOTILLA

♦ 1 (+ . . .) Brutar-class monitor Bldr: . . . (In serv. 1982)

D: 350-400 tons (fl) **S:** . . . **Dim:** $43.0 \times 8.0 \times 1.5$

A: 1/100-mm tank gun — 4/14.5-mm mg (II \times 2) — 1/122-mm BM-21 RL (XVIII \times 1) — mines

M: Diesels; . . . props; . . . hp

Remarks: "Brutar" is the NATO nickname. Very low-lying craft, armored tank turret and machine-gun turrets.

◆ 18 monitors Bldr: Dulcea SY (In serv. 1973-76)

VB 76 to VB 93

D: 85 tons S: 17 kts Dim: 32.0 × 4.8 × 0.9

A: 1/85-mm -4/14.5-mm AA (II \times 2) -2/81-mm mortars (I \times 2)

M: 2 diesels; 2 props; 1,200 hp Man: 25 tot.

REMARKS: VB = Vedeta Blindata (Armored Boat)

• 8 VG-class patrol craft Bldr: Galati (In serv. 1954)

VG 10-VG 17

D: 40 tons (fl) **S:** 18 kts **Dim:** 16.0 × 4.4 × 1.2

A: 1/20-mm AA — 1/7.9-mm mg

M: 2 3D12 diesels; 2 props; 600 hp Man: 10 men

ROMANIA (continued)
DANUBE FLOTILLA (continued)



VG class, VG 11

1971

20 river minesweepers

Bldr: Turnu-Severin SY (In serv. 1975-. . .)

SD 278

VD 141-VD 160

D: 65 tons (fl) S: 18 kts Dim: 26.0 × 4.0 × 0.8

A: 4/14.5-mm mg (II × 2) — mines M: 2 M50 diesels; 2 props; 1,200 hp

Remarks: Replaced the now-discarded Polish TR-40 class.

• 9 SM 165-class patrol/utility craft

SM 161-SM 169

D: 22 tons S: 12 kts Dim: 12.2 × 3.0 × 0.9

• 5 SD 200-class patrol/utility boats

SD 270 SD 274 SD 275 SD 277

• 1 Headquarters ship

REPUBLICA

REMARKS: A very old side-wheel paddle boat of about 300 tons (fl).

SABAH

State of Sabah (semi-autonomous Malaysian state)

PATROL BOATS

◆ 2 55-foot boats Bldr: Cheverton, Isle of Wight, U.K. (In serv. 2-75)

SRI SEMPORNA SRI BANGJI

D: 50 tons (fl) S: 20 kts Dim: 16.8 × 4.6 × 0.9 A: 1/12.7-mm mg M: 2 diesels; 2 props; 1,200 hp

Range: 300/15 Man: 11 tot.

◆ 2 91-foot boats Bldr: Vosper Thornycroft, Singapore

PX 17 SRI GUMANGTONG (In serv. 8-4-70)

PX 18 SRI LABUAN (In serv. 6-4-70)

D: 85 tons (fl) **S**: 29 kts **Dim**: $26.29 \times 5.7 \times 1.45$

A: 2/20-mm AA M: 2 Mercedes-Benz MB820Db diesels; 2 props; 2,790 hp Range: 700/15 Man: 15 tot.

REMARKS: On detachment from the Royal Malaysian Marine Police.

◆ 1 patrol boat Bldr: Mengsina Ltd., Singapore (In serv. 3-12-76)

KUALA BENGKOKA

D: . . . S: . . . Dim: 18.3 × . . . × . . .

A: . . . M: diesels

♦ 1 103-foot class Bldr

Bldr: Vosper Ltd., Portsmouth, U.K.

P 3147 Sri Melaka (L: 25-2-64)

D: 96 tons (109 fl) S: 23 kts Dim: 31.39 (28.95 pp) × 5.95 × 1.65

A: 2/40-mm AA $(I \times 2) - 2/7.62$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/Decca 1226

M: 2 Mayback MD 655/18 diesels; 2 props; 3,550 hp

Range: 1,660/14 Man: 3 officers, 19 men

Remarks: On detachment from Royal Malaysian Navy. Has fin stabilizers.

MISCELLANEOUS UNITS

◆ 1 yacht Bldr: Vosper Thornycroft, Singapore (In serv. 11-7-71)

PUTRI SABAH

D: 117 tons S: 22 kts Dim: 27.3 × 9.5 × 1.65 M: 1 diesel; 1 prop; . . . hp Man: 22 tot.

♦ 1 utility landing craft

Bldr: Chung Wah SY, Hong Kong (In serv. 28-1-78)

GAVA II

D: 220 grt S: 8 kts Dim: . . . × . . . × M: 2 Caterpillar D3406TA diesels; 2 props; 275 hp

ST. KITTS

State of Saint Christopher-Nevis

Note: Achieved full independence 8-83; the formerly associated island of Anguilla remains a British dependent.

Merchant Marine (1984): 2 ships - 556 grt (Anguilla: 14 ships - 4,067 grt)

PATROL BOAT

 1 U.S. 110-ft. Commercial Cruiser design City, Louisiana (In serv. 6-85) Bldr: Swiftships Inc., Morgan

C-253 STALWART (In serv. 7-85)



Stalwart (C-253)

Swiftships, 7-85

D: 99.8 tons (fl) S: 24 kts (22 cruise) Dim: 33.53 × 7.62 × 2.13 A: 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 1/. . . nav.

M: 4 G.M. 12V71TI diesels; 4 props; 2,400 hp Range: 2,500/15 Fuel: 31,608 liters Man: . .

REMARKS: Aluminum construction. Acquired with U.S. financial assistance.

POLICE FORCE

◆ 1 Spear class Bldr: Fairey Marine, U.K. (In serv. 10-9-74)

D: 4.3 tons (fl) **S:** 30 kts **Dim:** $9.1 \times 2.8 \times 0.8$ **A:** 2/7.62-mm mg ($I \times 2$) **M:** 2 diesels; 2 props; 360 hp **Man:** 2 tot.

ST. LUCIA

State of Saint Lucia

Merchant Marine (1984): 7 ships - 2,920 grt

COAST GUARD

PATROL CRAFT

 1 U.S. 65-ft Commercial Cruiser design City, Louisiana Bldr: Swiftships, Inc., Morgan

P-02 Defender (In serv. 3-5-84)

D: 35 tons (fl) S: 23 kts Dim: 19.96 × 5.59 × 1.52

A: Small arms Electron Equipt: Radar: 1/Raytheon 1210

M: 2 G.M. 12V71 TI diesels; 2 props; 1,350 hp Electric: 20 kw

Range: 500/18 Man: 6 tot.

Remarks: Aluminum construction. Ordered 9-11-83 with U.S. financial aid. Blue hull, white superstructure.

ST. LUCIA (continued) COAST GUARD (continued)



Defender (P-02)

Swiftships, 5-84

CUSTOMS SERVICE

• 1 small craft

Bldr: St. Vincent (In serv. 11-81)

VIGILANT

D: 6 tons (fl) S: 23 kts Dim: 8.2 × 2.4 × . . .

M: 1 Perkins diesel

REMARKS: Sister Helen II is operated by the police.

Note: Former patrol craft Helen sold 1981.

ST. VINCENT

State of Saint Vincent and the Grenadines

Merchant Marine (1984): 49 ships — 101,176 grt (tanker: 1 ship — 6,870 grt)

MARINE WING, POLICE FORCE

PATROL BOATS AND CRAFT

Note: One U.S. Swiftships 110-ft. patrol boat is to be acquired with U.S. aid; characteristics as for the St. Kitts unit.

1 patrol craft Bldr: Vosper Thornycroft, Portchester (In serv. 23-2-81)

SGV 05 GEORGE McIntosh



George McIntosh (SVG 05)

L. & L. Van Ginderen, 3-84

D: 70 tons (fl) S: 24.5 kts Dim: 22.86 × 7.43 × 1.64 A: 1/20-mm AA M: 2 Caterpillar 12V D348 TA diesels; 2 props; 1,840 hp Electric: 24 kw Range: 600/21; 1,000/11 Man: 3 officers, 8 men

Remarks: Glass-reinforced Nelson-design, glass-reinforced plastic hull.

♦ 2 locally built 8.2-m patrol craft

SVG 06 LARKAI SVG 07 BRIGHTON



Brighton (SVG 07)

L. & L. Van Ginderen, 3-84

SAUDI ARABIA

Kingdom of Saudi Arabia

Personnel (1985): 4,200 total (planned: 4,500 by 1987)

MERCHANT MARINE (1984): 422 ships - 3,863,272 grt

(tankers: 102 ships - 2,103,081 grt)

NAVAL AVIATION: The Saudi Navy has ordered 24 helicopters from S.N.I.A.S., France: 20 SA-365 F/AS Dauphin 2 for ship- and shore-based ASW and ship-attack, and 4 SA-365N Dauphin 2 configured for search-and-rescue duties, with the Omera DRB 32 search radar. The first production SA-365 F/AS flew 2-7-82. First six production units delivered 8-85 (4 SAR, 2 attack); six more to deliver by end-85, 12 in 1986.



SA-365 F/AS Dauphin production version - with 4 AS 15 missiles

S.N.A.I.S., 1982

Dauphin 2 helicopter:

Rotor diameter: 13.29 m; fuselage length: 11.41 m; height: 4 m; weight: light: 1,850 kg/max.: 3,900 kg; propulsion: 2 Turbomeca "Arriel" 1C turbines, 710 hp each.

Performance:

Speed: 130 kts max.

Radius of action — 100 nautical miles with 4/AS 15; 140 nautical miles with 2/AS 15

Endurance - 2 hours with 4/AS 15; 3 hours with 2/AS 15

Armament: 2 or 4 Aerospatiale AS 15 anti-ship missiles or 2 Mk 36 ASW torpedoes. The AS 15 missile has a range of 15 km, weighs 96 kg, and is 2.16 m long. The helicopter will carry an "Agrion-15" frequency-agile, pulse-doppler radar to provide missile targeting and to permit the helicopter to provide mid-course guidance update information to the ship-launched Otomat Mk 2 ("Erato") missiles.

NAVAL AVIATION (continued)

Otomat Mk 2 Erato anti-ship missile:

Length: 4.66 m; range: 90 nautical miles; diameter: 0.40 m (0.46 m rear); weight: 780 kg (210 kg warhead); propulsion: Turbomeca "Arbizon" turbojet, 2 rocket boosters.

GUIDED-MISSILE FRIGATES

♦ 0 (+2) new construction

Remarks: Planned for acquisition are two larger guided-missile frigates. France has offered the F4000 design, with the U.S. Standard SM1 missile (Mk 13 launcher) and Otomat anti-ship missiles. The U.S. has offered the Oliver Hazard Perry (FFG 7)

♦ 2 (+2) Al Madinah class

| | Bldr | Laid down | L = | In serv. |
|----------------|--------------------|-----------|----------|----------|
| 702 AL MADINAH | Arsenal de Lorient | 15-10-81 | 23-4-83 | 4-1-85 |
| 704 Hofoup | CNIM, La Seyne | 14-6-82 | 24-6-83 | 31-10-85 |
| 706 Авна | CNIM, La Seyne | 7-12-82 | 23-12-83 | 3-86 |
| 708 Taif | CNIM, La Seyne | 1-3-83 | 17-3-84 | 8-86 |



Hofouf (704)

G. Gyssels, 6-85



Al Madinah (702)

DCN, 1984



Al Madinah (702)

DCAN, 3-4-84



Al Madinah (702)

G. Gyssels, 6-85

D: 2,000 tons (2,250 normal, 2,610 fl) S: 30 kts

Dim: 115.00 (106.50 pp) × 12.50 wl × 3.40 (4.65 over sonar)

A: 8/Otomat Mk 2 "Erato" SSM (IV × 2)-1/Crotale EDIR SAM syst. VIII × 1; 26 total missiles) - 1/100-mm Compact DP - 4/40-mm Breda AA (II × 2) -4 tubes for F17P wire-guided torpedoes -1/Dauphin 2 ASW/antiship helicopter

Electron Equipt: Radar: 2/Decca TM 1226, 1/Sea Tiger (DRBV 15), 1/Castor HC, 1/DRBC-32E (on Crotale launcher); 1/helo control

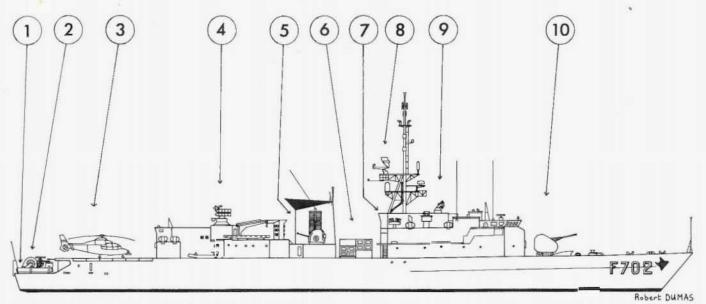
Sonar: Thomson-CSF TSM 2630 (Diodon) hull-mounted, TSM 2630 (Sorel) VDS

EW: Thomson-CSF DR 4000S intercept syst., Janet jammer, Telegon VI D/F, 2/Dagaie chaff RL

M: 4 SEMT-Pielstick 16 PA 6 BTC diesels/ 2 props; 32,500 hp Electric: 2,560 kw Fuel: 370 tons Range: 6,500/18; 8,000/15

Man: 15 officers, 50 petty officers, 114 men

REMARKS: Ordered 10-80 as part of the "Sawari" program, under which France replaced the U.S. Navy as principal naval equipment supplier. Very complex ships, with much new, untried equipment. Have Thomson-CSF TAVITAC computer data system, with 2 Type 15M 125F computers, 6 display consoles, E7000 tactical table; similar to French Navy's SENIT-VI. Retractable fin stabilizers fitted. Alcatel Type DLA torpedo f.c.s.



Al Madinah (702) 1. Torpedo tubes 2. Sorel variable depth sonar 3. Dauphin 2 helicopter 4. Crotale EDIR SAM launcher 5. Twin 40-mm Breda AA 6. Otomat SSM launchers 7. Dagaie decoy RL 8. Sea Tiger search radar 9. Castor IIC fire-control radar director 10. 100-mm Compact DP gun

GUIDED-MISSILE FRIGATES (continued)

Sorel is a VDS version of the Diodon sonar; both operate at 11, 12, or 13 kHz. There are 4 generator sets of 480 kw and 2 of 320 kw each. Carry 500 rds 100-mm ammunition, 6,300 rds 40-mm. There are two CSEE optical gun directors. There are 13 main watertight bulkheads to the hull.

GUIDED-MISSILE CORVETTES

| • 4 U.S. PCG class Bldr: Tacoma Boatbu | uilding, Tacoma, | wasn. |
|--|------------------|-------|
|--|------------------|-------|

| | Laid down | L | In serv. |
|---------------------------|-----------|---------|----------|
| 612 BADR (ex-PCG 1) | 30-5-79 | 26-1-80 | 28-9-81 |
| 614 AL-YARMOOK (ex-PCG 2) | 13-12-79 | 13-5-80 | 10-5-82 |
| 616 HITTEEN (ex-PCG 3) | 19-5-80 | 5-9-80 | 12-10-82 |
| 618 TABUK (ex-PCG 4) | 22-9-80 | 18-6-81 | 10-1-83 |



Badr (612)

G. Arra, 1982



Tabuk (618)

G. Arra, 1983

D: 903 tons (1,038 fl) S: 30 kts gas turbines, 21 kts diesel

Dim: $74.68 \times 9.60 \times 2.59$

A: 8/Harpoon SSM (IV × 2) -1/76-mm U.S. Mk 75 DP -1/20-mm Vulcan/ Phalanx AA -2/20-mm AA (I \times 2) -1/81-mm mortar -2/40-mm Mk 19 grenade launchers -6/Mk 32 ASW TT (III \times 2)

Electron Equipt: Radar: 1/SPS-55, 1/SPS-40B, 1/Mk 92 fire-control system Sonar: SQS-56

EW: SLQ-32 (V)1, Mk 36 SRBOC chaff RL (VI × 2) M: CODOG: 1 G.E. LM-2500 gas turbine (23,000 hp); 2 MTU 12V652 TB91

diesels (3,058 hp tot.); 2 CP props Electric: 1,200 kw Man: 7 officers, 51 men

REMARKS: Ordered 30-8-77. Have fin stabilizers. Program completed well behind schedule, with the ships considerably overweight. Have one Mk 24 optical target designator, Mk 309 ASW f.c.s.

GUIDED-MISSILE PATROL BOATS

| • 9 U.S. PGG class | Bldr: Peterson Builders, Sturgeon Bay, Wisc. |
|--------------------|--|
| | |

| Laid down | L | In serv. |
|-----------|--------------------------------|--|
| 30-9-78 | 22-9-79 | 15-12-80 |
| 12-3-79 | 17-5-80 | 22-6-81 |
| 19-10-79 | 23-8-80 | 3-9-81 |
| 4-3-80 | 15-11-80 | 23-11-81 |
| | 30-9-78 12-3-79 19-10-79 | 30-9-78 22-9-79 12-3-79 17-5-80 19-10-79 23-8-80 |

| 519 KHALID (ex-PGG 5) | 27-6-80 | 28-3-81 | 11-1-82 |
|----------------------------|----------|----------|----------|
| 521 Amr (ex-PGG 6) | 21-10-80 | 13-6-81 | 21-6-82 |
| 523 TARIQ (ex-PGG 7) | 10-2-81 | 23-9-81 | 16-8-82 |
| 525 OQBAH (ex-PGG 8) | 8-5-81 | 12-12-81 | 18-10-82 |
| 527 ABU OBAIDAH (ex-PGG 9) | 4-9-81 | 3-4-82 | 6-12-82 |



Amr (521)

G. Arra, 1983



Abu Obaidah (527)

L. & L. Van Ginderen, 11-82

D: 425 tons (495 fl) S: 34 kts gas turbines, 16 kts diesels Dim: 58.02 × 8.08 × 1.95

A: 4/Harpoon (II × 2) -1/76-mm U.S. Mk 75 DP -1/20-mm Vulcan/Phalanx AA = 2/20-mm $AA (I \times 2) = 1/81$ -mm mortar = 2/40-mm Mk 19 grenade launchers

Electron Equipt: Radar: 1/SPS-55, 1/Mk 92 fire-control system EW: SLQ-32 (V)1, Mk 36 SRBOC chaff RL (VI × 2)

M: CODOG: 1.G.E. gas turbine (23,000 hp); 2 MTU 12V652 TB91 diesels (3,058 hp tot.); 2 CP props

Electric: 800 kw Range: 600/30; 2,900/14 Man: 5 officers, 33 men

Remarks: Ordered 16-2-77. Fin stabilizers fitted. Delivered behind schedule and considerably over designed displacement. Have one Mk 24 optical target designation transmitter.

TORPEDO BOATS

♦ 3 German Jaguar class (Type 141)

Bldr: Lürssen, Vegesack (In serv. 1969)

DAMMAM KHABAR



Khabar

1975

D: 170 tons (210 fl) **S:** 40 kts **Dim:** 42.62 \times 7.10 \times 2.39 **A:** 2/40-mm AA (I \times 2) - 4/533-mm TT

M: 4 Maybach 16-cyl. diesels; 4 props; 12,000 hp Range: 500/39; 1,000/32 Man: 3 officers, 33 men

Remarks: Refitted 1976 by builders; possibly no longer operable.

MINE WARFARE SHIPS

• 4 U.S. MSC 322 class Bldr: Peterson Builders, Sturgeon Bay, Wisc.

| Laid down | L | In serv. |
|-----------|--------------------------------|--|
| 12-5-76 | 20-12-76 | 6-7-78 |
| 24-8-76 | 26-5-77 | 15-8-78 |
| 28-12-76 | 6-9-77 | 7-9-78 |
| 5-3-77 | 7-12-77 | 20-10-78 |
| | 12-5-76 24-8-76 28-12-76 | 12-5-76 20-12-76 24-8-76 26-5-77 28-12-76 6-9-77 |

MINE WARFARE SHIPS (continued)



Al-Quysumah (414)

L. & L. Van Ginderen, 8-78

D: 320 tons (407 fl) S: 14 kts Dim: 46.63 × 8.29 × 4.06 max.

A: 2/20-mm AA Mk 67 (II × 1)

Electron Equipt: Radar: SPS-55 - Sonar: SQQ-14 M: 2 Waukesha E1616 diesels; 2 props; 1,200 hp Electric: 2,150 kw Man: 4 officers, 35 men

Remarks: Ordered 30-9-75. Longer than standard U.S. export coastal minesweepers. Wooden construction. Have a 1,750-kw sweep current generator. Used primarily as patrol boats.

AMPHIBIOUS WARFARE CRAFT

4 U.S. LCU 1646 class

Bldr: Newport SY, Rhode Island (In serv. 1976)

212 AL-QIAQ (ex-SA 310)

216 AL-ULA (ex-SA 312) 218 AFIF (ex-SA 313)

214 As-Sulayel (ex-SA 311)

D: 173 tons (403 fl) S: 11 kts Dim: 41.07 × 9.07 × 2.08

A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/LN-66

M: 4 G.M. 6-71 diesels; 2 Kort-nozzle props; 900 hp Cargo: 168 tons

Electric: 80 kw Range: 1,200/10 Man: 2 officers, 12 men, 20 passengers

• 4 landing craft (LCM) many (In serv. 1982)

Bldr: Schlichting Werft, Travemunde, West Ger-

201-204

D: 26 tons (light) S: . . . Dim: 16.5 × 4.0 × . . .

M: 2 diesels; 2 props; . . . hp

♦ 8 U.S. LCM(6)-class landing craft (4 in serv. 7-77, 4 in serv. 7-80)

D: 24 tons (57.5 fl) S: 13 kts Dim: 17.07 × 4.37 × 1.14

A: 2/40-mm Mk 19 grenade launchers

M: 2 G.M. 6V71 diesels; 2 props; 450 hp

Range: 130/9 (loaded) Man: 5 tot.

Remarks: Cargo: 30 tons or 80 troops. Cargo well: 11.9 × 3.7.

AUXILIARIES

• 2 underway replenishment oilers Bldr: CN la Ciotat, Marseilles

Laid down

902 BORAIDA 22-1-83 13-4-82 29-2-84

9-10-83 20-10-84 29-8-85 904 YUNBOU

D: 10,500 tons (trials) S: 20.5 kts Dim: 135.0 × 18.7 × 7.0

A: 4/40-mm AA (II × 2) -2/Dauphin 2 helicopters

Electron Equipt: Radar: 2/. . . nav.

M: 2 SEMT-Pielstick 14 PC 2.5V400 diesels; 2 CP props; 13,200 hp Electric: 3,440 kw Range: 7,000/17 Man: 140 tot. + 55 cadets



Boraida (902)

DCN, 1984



Boraida (902)

L. & L. Van Ginderen, 8-84

REMARKS: Ordered 10-80 as part of the "Sawari" program. Design a reduced version of the French Durance class. To act as training ships as well as replenishment vessels. Cargo includes 4,350 tons diesel fuel; 350 tons aviation fuel; 140 tons potable water; 100 tons provisions; 100 tons munitions; and 70 tons spares. One replenishment station per side, plus over-the-stern refueling. Can transfer 1.7-ton solid loads. Have electrical, mechanical, and metal workshops. Endurance: 30 days. Two CSEE Naja directors for the 40-mm AA. The helicopters will be supplied with ASW and anti-ship weapons. 902 left 3-8-84 for Saudi Arabia.

 1 Jetfoil-type hydrofoil royal yacht Bldr: Boeing, Seattle (In serv. 8-85) N. . .

D: 115 tons (fl) S: 46 kts Dim: 27.4 (foils down) × 9.1 × 1.9 hull (5.2 foils down at rest/2.0 foiling)

A: 2/20-mm G.E. Sea Vulcan gatling AA (I × 2)

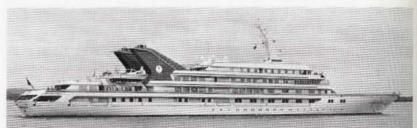
Electron Equipt: Radar: 1/. . . nav.

M: 2 Allison 501-KF20A gas turbines; 2 Rocketdyne R-20 waterjet pumps; 9,000 hp (7,560 sust.)—2 G.M. 8V92 TI diesels; 2 props; 900 hp for hullborne cruise Range: 890/40, 1,500/15 (hullborne) Fuel: 33 tons Man: . . .

REMARKS: Aluminum construction. Subcontracted to Boeing by Lockheed. Has a Kollmorgan electro-optical GFCS for the gunmounts. Acts as tender for the larger yachts.

♦ 1 royal yacht Bldr: Helsingor Vaerft, Denmark (In serv. 12-83)

ABDUL AZIZ



Abdul Aziz - white with blue funnels

Walles Foto, 5-84

D: Approx. 5,200 tons (fl) S: 22 kts Dim: 147.00 (126.00 pp) × 18.00 × 4.90 M: 2 Lindholmen-Pielstick 12 PC 2-5V400 diesels; 2 props; 15,600 hp Fuel: 640 tons Man: 65 crew, plus 4 royalty, plus 60 passengers

Remarks: Delivered by builders 4-83 to Vosper Shiprepairers, Southampton, for final fitting out and ran post-outfitting trials 15-5-84. Stern ramp leading to vehicle garage. Swimming pool. Helicopter hangar forward. Perhaps the nicest touch: a retractable figurehead, with closure doors in the stem. Presumably supplements the Al Riyadh, below.

• 1 royal yacht Bldr: C. Van Lent & Sons, Kaag, Netherlands (In serv. 1-78) AL RIYADH

D: 670 tons (fl) S: 20 kts Dim: 64.64 (59.22 pp) × 9.7 × 3.0 A: None Electron Equipt: Radar: 1/Decca RM 916 M: 2 MTU 16V956 diesels; 2 props; 5,720 hp Electric: 370 kw Range: 1,750/18 Man: 16 tot.

REMARKS: Fin stabilizers and Schöttel bow-thruster fitted.

 1 salvage tug Bldr: Hayashikane, Shimonoseki (In serv. 1978)

13 JEDDAH

D: 350 tons S: 12 kts Dim: 34.4 × . . . × . . . M: 2 diesels; 800 hp

2 U.S. YTB 760 class tugs (In serv. 15-10-75)

EN 111 Tuwaig (ex-YTB 837) EN 112 DAREEN (ex-YTB 838)

D: 291 tons (316 fl) S: 12 kts Dim: 33.22 × 9.30 × 4.14 A: 2/20-mm AA (I×2) Electron Equipt: Radar: 1/LN-66

M: 2 diesels; 1 prop; 2,000 hp Electric: 120 kw Range: 2,000/10 Man: 4 officers, 8 men

Remarks: 25-ton bollard pull. Intended for target towing, firefighting, torpedo recovery, and local patrol duties.

Note: Eleven more tugs in the Radhwa-series are government-owned, but not naval.

SAUDI ARABIA (continued)

COAST GUARD

PATROL BOAT

1 U.S. Coast Guard Cape class

RIYADH

D: 102 tons (fl) S: 18 kts Dim: 28.95 × 5.8 × 1.55 A: 1/40-mm AA M: 4 Cummins VT-12-M-700 diesels; 2 props; 2,324 hp Electric: 40 kw Range: 1,500/12 Man: 15 tot.

Remarks: Transferred in 1969.

PATROL CRAFT

Bldrs: 20 units: Bayerische Schiffsbau, Erlenbach; 5 units: • 25 Scorpion class Arminias Werft, Bodenwerder, West Germany (In serv. 1979, except last 10: 28-2-81)



P. Voss, 5-82

D: 33 tons (fl) S: 25 kts Dim: 17.14 (15.6 pp) × 4.98 × 1.40 A: 2/7.62-mm mg Electron Equipt: Radar: 1/Decca RM 914 M: 2 G.M. 12V71 TI diesels; 2 props; 1,300 hp (1,050 sust.) Range: 200/20 Man: 7 tot.

• 12 Rapier class Bldr: Halter Marine, New Orleans, La. (In serv. 1976-77) 127-138



Rapier class

Halter Marine, 1976

D: 26 tons (fl) S: 28 kts Dim: 15.24 × 4.57 × 1.35 A: 2/7.62-mm mg (I × 2) M: 1 G.M. 12V71 TI diesels; 2 props; 1,300 hp Electric: 20 kw Man: 1 officer, 8 men

Bldr: Northshore Yacht Yard, U.K. (In serv. 1975-77)

D: 2.8 tons (fl) S: 20 kts Dim: 8.9 × 2.9 × 0.6 A: 1/7.62-mm mg M: 1 Caterpillar diesel; Castoldi water jet; 210 hp Man: 3 tot.

 10 Huntress class Bldr: Fairey Marine, Hamble, U.K. (In serv. 1976)

D: 4 tons (fl). . . **S:** 20 kts **Dim:** $7.1 \times 2.7 \times 0.8$ A: 1/7.62-mm mg M: 1 diesel; 180 hp Range: 150/20 Man: 4 tot.

* 8 SRN.6 Mod. 8 hovercraft Bldr: British Hovercraft, Cowes (In serv.: 6 in 1981, 2 in 1-82)

D: 17 tons (fl) S: 50-55 kts Dim: 18.3 × 8.5 × . . . A: Small arms Electron Equipt: Radar: 1/Decca . . .

M: 1 Rolls-Royce Gnome gas turbine; 1 lift fan, 1 airscrew; 1,060 hp



Two Saudi Coast Guard SRN.6 Mod. 8

British Hovercraft, 1981

Remarks: Payload: 6 tons. Endurance: 6 to 11 hours. Carry 1,200 liters fuel internally, plus two 450-1 deck tanks.

♦ 16 SRN.6-class hovercraft Bldr: British Hovercraft, 1970 and 1981 D: 10 tons S: 58 kts Dim: 14.8 × 7.7 × 4.8 (high) A: 1/7.62-mm mg M: 1 Rolls-Royce Gnome gas turbine; 900 hp

* 8 harbor patrol craft Bldr: Yokohama Yacht, Japan, 1972 D: . . . S: 20 kts Dim: 10.5 × 3.0 × . . . M: 2 diesels; 2 props; 280 hp

Note: There are also several hundred small boats: 200 of 5.1-m length with 40-hp engines and 100 of 4.2-m length with a 20-hp engine.

AUXILIARIES AND SERVICE CRAFT

• 1 training ship Bldr: Bayerische Schiffsbau, Erlenbach, West Germany (In serv. 12-77)

TEBUK

D: 600 tons (750 fl) S: 20 kts Dim: 60.0 (55.5 pp) × 10.0 × 2.50 Electron Equipt: Radar: 1/Decca TM 1226 M: 2 MTU 16V538 TB81 diesels; 2 props; 5,260 hp (4,800 sust.) Range: 2,400/18; 3,900/12 Electric: 1,040 kVA Man: 24 crew, plus 36 trainees

◆ 3 small fuel lighters - 27-mm overall

AL FORAT DAJLAH N.

• 2 yachts

AL DERIYAH PROMINEUT

• 5 barges

♦ 4 motor dhows

SENEGAL

Republic of Senegal

(Note: The "confederation" with the Gambia does not affect military forces.)

Personnel: 650 men

Merchant Marine (1985): 135 ships - 44,056 grt (tankers: 3 ships -3,620 grt)

NAVAL AVIATION: One Canadian de Havilland DHC-6-300M Twin Otter for Maritime

PATROL BOATS

P. . . N. . .

♦ 0 (+1) Osprey 50 design Bldr: Fredrikshavn Vaerft, Denmark

> Laid down L In serv.

D: 470 tons (fl) S: 19 kts Dim: 49.90 (45.80 pp) × 10.50 × 3.48

A: 2/40-mm AA -2/20-mm AA (I \times 2) -2/12.7-mm mg (I \times 2) Electron Equipt: Radar: . . Electric: 359 kVA Electron Equipt: Radar: . . . Electric: 359 kVA M: 2 Burmeister & Wain 16VL3L-VO diesels; 2 CP props; 4,640 hp Range: 4,500/16 Man: . . .

Remarks: Ordered late 1984. Thornycroft-Giles "short, fat ship" hull. Sisters in Danish and Burmese service. Will probably be used for 200-n.m. economic zone and fisheries

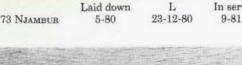
PATROL BOATS (continued)

1 French PR 72 MS class

Bldr: SFCN, Villeneuve-la-Garenne

P 773 NJAMBUR

In serv. L





Njambur (P 773)

SFCN, 1981

D: 381 tons light (451 fl) S: 30 kts Dim: 58.70 (54.0 pp) × 8.22 × 2.18 A: 2/76-mm OTO Melara Compact (I × 2) - 2/20-mm Type F2 AA (I × 2)

Electron Equipt: Radar: 1/Decca 1226

M: 4 AGO 195V16 RVR diesels; 4 props; 12,800 hp Range: 2,500/16 Man: 39 tot. plus 7 passengers

Remarks: Can be equipped later with 4/Exocet SSM. Two CSEE Naja optical GFCS.

♦ 3 PR-48 class Bldr: SFCN, Villeneuve-la-Garenne

| | Laid down | L | In serv |
|-------------|-----------|---------|---------|
| SAINT LOUIS | 20-4-70 | 5-8-70 | 1-3-7 |
| POPENGUINE | 12-73 | 22-3-74 | 10-8-74 |
| Podor | 12-75 | 20-7-76 | 13-7-7 |



Saint Louis

1971

D: 240 tons (avg.) S: 23 kts Dim: 47.5 (45.5 pp) \times 7.1 \times 2.5 A: 2/40-mm AA (I \times 2) — 2/7.62-mm mg (I \times 2) Electron Equipt: Radar: 1/Decca 1226 M: 2 AGO V12 CZSHR diesels; 2 props; 6,240 hp

Range: 2,000/16 Man: 3 officers, 22 men

PATROL CRAFT

♦ 3 "Interceptor" class Bldr: Turbec Ltd., St. Catherine, Canada

SENEGAL II SINÉ SALOUM II CASAMANCE II

D: 52 tons (62 fl) S: 32 kts Dim: 26.5 × 5.81 × . A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/LN-66

M: 2 diesels; 2 props; 2,700 hp

Remarks: In service 2-79, 7-79, and 10-79, respectively. Used for fisheries protection



Casamance II

& L. Van Ginderen

AMPHIBIOUS WARFARE SHIPS

 ◆ 1 (+1) ex-French EDIC-class landing craft (L: 11-4-58) Bldr (new unit): SFCN, Villeneuve-la-Garenne

FALEME (ex-EDIC 9095)

D: 250 tons (670 fl) S: 8 kts Dim: $59.0 \times 11.95 \times 1.3$ A: 2/20-mm AA (I \times 2) M: 2 MGO diesels; 2 props; 1,000 hp Range: 1,800/8 Man: 16 tot.

Remarks: Transferred 7-1-74. Can carry eleven trucks or five LVT amphibious personnel carriers. Second unit, a possible replacement for the first, ordered, 5-85.

♦ 2 ex-U.S. LCM-6-class landing craft

DJOMBOSS Douloulou

> D: 26 tons (52 fl) S: 10 kts Dim: 17.1 × 4.4 × 1.2 M: 2 Gray Marine 64 HN9 diesels; 2 props; 330 hp

Remarks: Transferred in 7-68.

AUXILIARY SHIPS

• 1 training ship

CRAME JEAN (ex-Raymond Sarr)

D: 18 tons

Remarks: A former fishing vessel, acquired 1978.

• 1 tug

IBIS

D: 200 tons (fl) **S:** 9 kts **Dim:** $18.4 \times 5.7 \times 2.5$ M: 1 Poyaud diesel; 250 hp Range: 1,700/9

REMARKS: On loan from the French Navy.

SENEGAL POLICE

PATROL CRAFT

♦ 2 Type DS 01 Bldr: Celayo, Bilbao, Spain (In serv. 1-82)

D: 26 tons (fl) **S**: 20 kts **Dim**: 16.0 (13.3 pp) \times 4.8 \times 1.6 A: 1/12.7-mm mg Electron Equipt: Radar: 1/Decca 110 M: 2 G.M. 5V71 TI diesels; 2 props; 870 hp Man: 8 tot.

• 4 harbor craft Bldr: ARESA, Arenys de Mar, Spain (In serv. 1979) D: 3.5 tons (fl) S: 18 kts Dim: 8.5 × . . . × . . .

Bldr: Fairey Marine, Hamble, U.K. (In serv. 1974-77) 3 Lance class

DJIBRILL DJILOR GORÉE

D: 15.7 tons S: 24 kts Dim: 14.8 × 4.7 × 1.3 A: 2/7.62-mm mg (I × 2) M: 2 G.M. 8V71 TI diesels; 2 props; 850 hp Man: 7 tot.

Bldr: Vosper Thornycroft ♦ 7 45-foot class

D: 10 tons (fl) S: 25 kts Dim: 13.7 × 4.0 × 1.1 A: 1/12.7-mm mg -2/7.62-mm mg (I \times 2) M: 2 diesels; 2 props; 920 hp Man: 6 tot.

Remarks: Five sisters discarded.

 2 Huntress class Bldr: Fairey Marine, Hamble, U.K. (In serv. 1974)

D: 4 tons (fl) S: 20 kts Dim: 7.1 × 2.7 × 0.8

A: 1/7.62-mm mg M: 1 diesel; 180 hp Man: 2 tot.

SEYCHELLES

Republic of Seychelles

MERCHANT MARINE (1984): 3 ships - 1,160 grt

NAVAL AVIATION: 1 Britten-Norman BN-42 B/T Maritime Defender for surveillance ordered 1983. Libya donated 2 super Rallye light planes in 1980, and India delivered 2 Chetak (Alouette-III) helicopters in 6-82.

PATROL BOATS AND CRAFT

♦ 1 FPB 42 class

Bldr: C.N. Picchiotti, Viareggio, Italy (In serv. 10-1-83)

505 Andromanche



Andromanche (505)

Picchiotti, 1-83

D: 240 tons (268 fl) S: 28 kts Dim: 41.80 × 8.00 × 2.50 (props; 1.70 hull)

A: 1/20-mm AA -2/7.62-mm mg (I \times 2)

Electron Equipt: Radar: 2/Furuno.

M: 2 Paxman Valenta 16 RP200 CM diesels; 2 props; 6,800 hp (5,700 sust.)

Range: 3,000/16 Man: 22 tot.

Remarks: Ordered 8-10-81. A second unit is planned.

♦ 1 ex-French Sirius-class former minesweeper 13-6-56)

Bldr: Seine Maritime (L:

P. . . Topaz (ex-Croix du Sud, P 658)

D: 400 tons (440 fl) S: 15 kts Dim: $46.4~(42.7~pp) \times 8.55 \times 2.5$ A: 1/40-mm AA -1/20-mm AA M: 2 SEMT-Pielstick diesels; 2 props; 2,000 hp

Fuel: 48 tons Range: 3,000/10 Man: 2 officers, 35 men

Remarks: Transferred 1979. Minesweeping gear removed.

• 2 Soviet Zhuk class

CONSTANT (In serv. 17-10-81) FORTUNE (In serv. 11-82)

D: 60 tons (fl) S: 34 kts Dim: 24.0 × 5.0 × 1.8 (props)

A: 4/14.5-mm mg (II × 2) Electron Equipt: Radar: 1/Spin Trough

M: 2 M-50 F4 diesels; 2 props; 2,400 hp

♦ 1 glass-reinforced plastic-hulled Bldr: Tyler, U.K. (In serv. 4-80)

JUNON

D: 40 tons S: 26 kts Dim: 18.3 × . . . × . .

M: 2 G.M. diesels; 2 props; 1,040 hp Range: 1,000/22

AUXILIARY SHIP

 1 medium landing ship Bldr: A.C. de la Perrière, France

Laid down L In serv.

5 Juin 19-9-78 7-4-78 11-1-79

D: 350 tons (855 fl) S: 9 kts Dim: 58.2 × 11.37 × 1.9

M: 2 Poyaud A12 150M diesels; 2 props; 880 hp Range: 2,000/9

Remarks: Owned by the government but operated in local commercial service. Bow ramp. Cargo: 272 tons.

SIERRA LEONE

Republic of Sierra Leone

Personnel (1985): 45 men

MERCHANT MARINE (1984): 23 ships - 5,573 grt

PATROL CRAFT

• 1 Tracker Mk II class

Bldr: Fairey Allday Marine, Hamble, U.K. (In serv.

27-11-82)

PRESIDENT SIOKA STEVENS

D: 31 tons S: 29 kts Dim: 19.25 × 5.00 × 1.45

A: 1/20-mm AA-2/7.62-mm mg (I × 2) Electron Equipt: Radar: 1/Decca 090

M: 2 G.M. 12V71 diesels; 2 props; 1,300 hp Range: 650/25 Man: 11 tot.

Remarks: Glass-reinforced plastic construction. Completed 6-12-81, but not placed in service for nearly a year.

Note: Three Chinese Shanghai II-class patrol boats delivered in 1976 are no longer in

NGAPORE

Republic of Singapore

Personnel (1985): approximately 3,000 men

MERCHANT MARINE (1984): 825 ships -- 6,512,344 grt

(tankers: 149 ships - 2,294,785 grt)

GUIDED-MISSILE PATROL BOATS

Note: Some 16-20 U.S. RGM-84A Harpoon anti-ship missiles were ordered in 1985.

♦ 6 FPB 45 class

In serv. In serv. In serv. P 78 SEA DRAGON P 80 SEA HAWK P 76 SEA WOLF 1974 1975 1972 P 77 SEA LION 1972 P 79 SEA TIGER 1974 P 81 SEA SCORPION 1975

Bldrs: P 76, P 77: Lürssen, Vegesack; others: Singapore SB & Eng., Jurong



Sea Scorpion (P 81)

L. & L. Van Ginderen, 3-84

D: 225 tons (252 fl) S: 38 kts Dim: 44.90 (42.30 wl) × 7.00 × 2.48 A: 5 Gabriel I missiles (III × 1, I × 2) — 1/57-mm AA — 1/40-mm AA Electron Equipt: Radar: 1/Decca TM 626, 1/H.S.A. WM-28 M: 4 MTU 16V538 diesels; 4 props; 14,400 hp Range: 2,000/15 Man: 40 tot.

Remarks: Ordered in 1970. Frequently seen without missiles. Two multiple 57-mm flare launchers on 57-mm mount. Carry 504 rounds 57-mm, 1,008 rounds 40-mm. Intercept equipment on tripod topmast added 1980-81.

PATROL BOATS

 ◆ 1 (+2) German FPB 57 class Bldr: Singapore SB & Eng., Jurong

| | | Laid down | L | In serv |
|---|---|-----------|---|---------|
| P | N | 6-80 | | 9-83(?) |
| P | N | | | 4 4 4 |
| D | N | | | |

D: 353 tons normal (398 fl) S: 36.5 kts Dim: 58.10 (54.40 wl) × 7.62 × 2.83

A: 1/76-mm OTO Melara DP-2/35-mm Oerlikon GDM-A AA (II×1) Electron Equipt: Radar: 1/navigational, 1/H.S.A. WM 28-41

EW: SUSIE-1 passive intercept

M: 4 MTU 16V956 TB91 diesels; 4 props; 18,000 intercept Electric: 405 kVA Range: 700/35 Man: 5 officers, 33 men

PATROL BOATS (continued)

Remarks: Three were to be built for Singapore Navy use and three on speculation, for export. Carry 300 rounds 76-mm, 2,750 rounds 35-mm and can be equipped with anti-ship missiles. Program status in doubt; do not appear on fleet lists.

♦ 3 110-foot, "Type A"

| | Bldr | L | In serv. |
|-------------------|--------------------------------|----------|----------|
| P 69 INDEPENDENCE | Vosper Thornycroft, Portsmouth | 15-7-69 | 8-7-70 |
| P 70 FREEDOM | Vosper Thornycroft, Singapore | 18-11-69 | 11-1-71 |
| P 72 JUSTICE | Vosper Thornycroft, Singapore | 20-6-70 | 23-4-71 |



Justice (P 72)

L. & L. Van Ginderen, 3-84

D: 100 tons (130 fl) S: 30 kts Dim: 33.4 (31.46 pp) × 6.4 × 1.71
A: 1/40-mm Bofors AA — 1/20-mm Oerlikon AA

Electron Equipt: Radar: 1/Decca TM 626 M: 2 MTU 16V538 diesels; 2 props; 7,200 hp

Electric: 100 kw Range: 1,100/15 Man: 3 officers, 16 men

Remarks: Ordered 21-5-68. Two 50-mm flare RL on 40-mm shield sides

◆ 3 110-foot, "Type B"

| | Bldr | L | In serv. |
|------------------|--------------------------------|----------|----------|
| P 71 Sovereignty | Vosper Thornycroft, Portsmouth | 25-11-69 | 2-71 |
| P 73 DARING | Vosper Thornycroft, Singapore | 1970 | 18-9-71 |
| P 74 DAUNTLESS | Vosper Thornycroft, Singapore | 6-5-71 | 7-71 |



Sovereignty (P 71)

Vosper, 1971

D: 100 tons (130 fl) S: 32 kts Dim: 33.4 × 6.4 × 1.71

A: 1/76.2-mm Bofors - 1/20-mm Oerlikon AA

Electron Equipt: Radar: 1/Decca TM 626, 1/H.S.A. M-26

M: 2 MTU 16V538 diesels; 2 props; 7,200 hp Range: 1,000/15 Man: 3 officers, 16 men

Remarks: Gun and fire-control system as on the Norwegian Storm class. The 76.2-mm is for surface fire only.

• 1 British Ford class

| | Bldr | L | In serv. |
|---------------|-----------------------------|---------|----------|
| P 48 PANGLIMA | United Engineers, Singapore | 14-1-56 | 5-56 |



Panglima (P 48)

1983

D: 119 tons (131 ft) **S**: 14 kts **Dim**: $35.76 \times 6.1 \times 1.68$ **A**: 1/40-mm AA -1/20-mm AA -2/7.62-mm mg (I \times 2)

M: 2 Paxman 12YHAXM diesels; 2 props; 1,000 hp Fuel: 15 tons Man: 15 tot.
Remarks: Transferred by Malaysia in 1967 and used for training.

◆ 1 ex-French craft Bldr: Deggendorfer Werft, West Germany (In serv. 1955)
P 75 Endeavor

D: 184 tons (fl) S: 20 kts Dim: 40.9 × 7.6 × 2.4 Range: 800/8

A: 2/20-mm AA (I × 2) M: 2 Maybach diesels; 2 props; 2,000 hp Man: 24 tot.

Remarks: Purchased on 30-9-70. Low freeboard. Used for training and as a diving tender.

PATROL CRAFT

| ♦ 12 "Swift" class | Bldr: Singapore SB & Eng., Jurong (In serv. 20-10-81) | | |
|--------------------|---|-----------------------|--|
| P 10 SWIFT ARCHER | P 14 SWIFT WARRIOR | P 18 SWIFT CHALLENGER | |
| P 11 SWIFT WARLORD | P 15 SWIFT SWORDSMAN | P 19 SWIFT CAVALIER | |
| P 12 SWIFT LANCER | P 16 SWIFT COMBATANT | P 20 SWIFT CENTURION | |
| P 13 SWIFT KNIGHT | P 17 SWIFT CONQUEROR | P 21 SWIFT CHIEFTAIN | |



Swift Cavalier (P 19)

L. & L. Van Ginderen, 3-84

D: 45.7 tons (fl) S: 34 kts (32 sust.)
Dim: 22.7 (20.0 pp) × 6.2 × 1.6 (3.0 props)
A: 1/20-mm AA — 2/7.62-mm mg (I × 2)
Electron Equipt: Radar: 1/Decca 1226
M: 2 Deutz 816 diesel; 2 props; 2,880 hp
Range: 960/20 Man: 3 officers, 9 men

Remarks: All commissioned same date; first unit launched 8-6-80. Design based on Australian de Havilland "Capricornica" design. Provision for installing 2 Gabriel SSM.

MINE WARFARE SHIPS

 2 ex-U.S. Redwing-class minesweepers Bldrs: M 101: Tampa Marine, Tampa, Florida; M 102: Bellingham SY, Bellingham, Washington

| | Laid down | L | In serv. |
|--|-----------|---------|----------|
| M 101 Jupiter (ex-Thrasher, MSC 203) | 1-4-54 | 6-10-54 | 16-8-55 |
| M 102 Mercury (ex-Whippoorwill, MSC 207) | 7-1-54 | 13-8-54 | 20-10-55 |

D: 300 tons (372 fl) S: 13 kts Dim: 43.0 × 7.95, × 2.55

A: 1/20-mm Electron Equipt: Radar: 1/SPS-5 - Sonar: UQS-1D

M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp Fuel: 40 tons

Range: 2,500/10 Man: 39 tot.

Remarks: Purchased on 5-12-75. Re-armed with new Oerlikon 20-mm AA, 1980.

AMPHIBIOUS WARFARE SHIPS

♦ 5 ex-U.S. LST 542 class

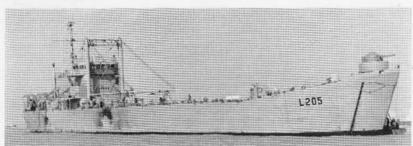
| | Laid down | L | In serv. |
|---|-----------|----------|----------|
| L 201 Endurance (ex-Holmes County, LST 836) | 11-9-44 | 29-10-44 | 25-11-44 |
| L 202 Excellence (ex-T-LST 629) | 13-4-44 | 8-7-44 | 28-7-44 |
| L 203 Intrepid (ex-T-LST 579) | 4-5-44 | 22-6-44 | 21-7-44 |
| L 204 RESOLUTION (ex-T-LST 649) | 19-7-44 | 6-10-44 | 26-10-44 |
| L 205 Persistence (ex-T-LST 614) | 28-1-44 | 6-5-44 | 22-5-44 |

Bldrs: L 201: American Bridge, Pa.; L 202, L 204, L 205, L 206: Chicago Bridge & Iron, Seneca, Ill.; L 203: Missouri Valley Bridge & Iron, Evansville, Ind.

D: 1,653 tons, light (4,080 ft) S: 11.6 kts Dim: 99.98 (96.32 pp) × 15.24 × 4.29 A: L 201: 5/40-mm AA (1 × 5) — others: 1/40-mm AA — all: 2 or more/ 7.62-mm mg Electron Equipt: Radar: 1/Decca 626 Electric: 300 kw Range: 19,000/9 M: 2 G.M. 12-567A diesels; 2 props; 1,800 hp Man: 120 tot.

Remarks: Originally numbered A 81 to A 85, L 201 loaned 1-7-71 and purchased 5-12-75; chartered in 1976 for commercial service at which time guns were removed. Others purchased 4-6-76. L 202 has two 40-mm AA (I × 2) forward and a helicopter deck aft. L 204 to 205 in reserve until 1980 when refitting began. All are getting 1/40-mm AA fwd. Three more ex-Military Sealift Command T-LSTs (ex-T-LST 117, ex-T-LST 276, and ex-Chase County, T-LST 532) were purchased 4-6-76 but later

SINGAPORE (continued) AMPHIBIOUS WARFARE SHIPS (continued)



Persistence (L 205)

L. & L. Van Ginderen, 3-83



Endurance (L 201)

L. & L. Van Ginderen, 3-83

sold commercially. Sister Perseverance (L 206, ex-T-LST 623) is in reserve for spare parts. L 201 has a new aft superstructure.

◆ 2 new-construction landing craft Bldr: North SY, Singapore (L: 1985) RPL 60 N. RPL 61 N.

D: 151 tons (fl) S: . . . Dim: 36.0 × . . . × . . . M: . . .

 4 Ayer Chawan-class landing craft (In serv. 1968-69)
 Bldr: Vosper Thornycroft, Singapore

RPL 54 AYER CHAWAN RPL 56 N. RPL 55 AYER MERBAN RPL 57 N.

D: 150 tons (fl) S: 10 kts Dim: $27.0 \times 6.9 \times 1.3$ M: 2 diesels; 2 props; 650 hp

♦ 2 Brani-class landing craft Bldr: Australia (In serv. 1955-56)

RPL 41 Brant RPL 42 Berlayer

D: 56 tons (fl) S: 9 kts Dim: 17.0 × 4.3 × 1.4 M: 2 diesels; 2 props; 460 hp Note: In 5-81 it was announced that a small tanker powered by 2 MWM TBP-6K diesels (2,060 hp) was to be acquired.

MARINE POLICE

PATROL CRAFT ◆ 11 PT 1 class

| | Laid down | L | In serv. | | Laid down | L | In serv. |
|------|-----------|----------|----------|-------|-----------|---------|----------|
| PT 1 | 21-7-83 | 19-12-83 | 14-1-84 | PT 7 | 11-10-83 | 30-5-84 | 19-6-84 |
| PT 2 | 25-7-83 | 6-1-84 | 17-2-84 | PT8 | 14-10-83 | 16-6-84 | 5-7-84 |
| PT 3 | 28-7-83 | 16-1-84 | 13-3-84 | PT9 | 21-12-83 | 4-7-84 | 1-8-84 |
| PT 4 | 1-8-83 | 23-3-84 | 6-4-84 | PT 10 | 6-1-84 | 23-7-84 | 24-8-84 |
| PT 5 | 15-9-83 | 23-4-84 | 15-5-84 | PT 11 | 19-1-84 | 10-8-84 | 5-9-84 |
| PT 6 | 30-9-83 | 14-5-84 | 1-6-84 | | | | |

Bldr: Singapore SB & Eng., Jurong



L. & L. Van Ginderen, 7-85

D: 20 tons
 S: 29 kts
 Dim: 14.54 × 4.23 × 1.20 (prop)
 A: 1/7.62-mm mg
 Electron Equipt: Radar: 1/Decca . . . nav.
 M: 2 M.A.N. D2542 MLE diesels; 2 props; 1,076 hp
 Man: 2-6 tot.

Remarks: Aluminum construction.

♦ 4 PX class Bldr: Vosper Thornycroft, Singapore (In serv. 1969)

PX 10 PX 11 PX 12 PX 13

D: 80 tons (fl) S: 29 kts Dim: 26.29 × 5.7 × 1.45 Range: 700/15
 A: 2/20-mm AA M: 12 MTU diesels; 1 props; 2,700 hp Man: 15 tot.

♦ 19 PX 14 class Bldr: Sembawang SY (In serv. 1981)

PX 14-33

D: . . . S: 32 kts Dim: 11.2 × . . . × M: 2 MTU diesels; 2 props; 770 hp

♦ 20 PC 32 class Bldr: Vosper Thornycroft, Singapore (In serv. 1978-79) PC 32 to PC 51

D: 2 tons (fl) S: 35 kts Dim: 6.5 × 2.5 × 0.46

A: Small arms M: 2 Johnson outboards; 280 hp Man: 4 tot.

SOLOMON ISLANDS

Merchant Marine (1984): 26 ships - 5,811 grt

PATROL BOATS AND CRAFT

 0 (+1) ASI 315 design Bldr: Australian SB Ind. (WA), Pty., Ltd., South Coogie, Western Australia (In serv. 1986)

D: 165 tons (fl)
 S: 20 kts (sust.)
 Dim: 31.50 (28.60 wl) × 8.10 × 2.12
 A: small arms
 Electron Equipt: Radar: 1/Furuno 1011
 M: 2 Caterpillar 3516 diesels; 2 props; 2,400 hp
 Endurance: 10 days

Range: 2,500/12 Fuel: 33 tons Electric: 120 kw Man: 3 officers, 14 men

Remarks: "Pacific Patrol Boat" design winner for Australian foreign aid program. Ordered 5-85.

◆ 1 P-150 class Bldr: Australian Marine Services Assoc., North Fremantle
 02 Savo (ex-Pioneer) (In serv. 1987)



Savo (02)

L. & L. Van Ginderen, 7-85

D: . . . S: 26 kts Dim: 25.0 × . . . × . . . A: . . . Electron Equipt: 1/. . . nav. Range: 520/20; 1,100/12 M: 2 Caterpillar 3412 V-12 diesels; 2 props, 1,500 hp

Remarks: Glass-reinforced plastic demonstration patrol boat purchased 1984 after Pacific sales tour. Used for fisheries patrol.

◆ 1 Carpentaria class Bldr: De Havilland Marine, Homebush Bay, Australia 01 Tulagi (In serv. 30-3-79)

D: 27 tons (fl) S: 27 kts Dim: 16.0 × 5.0 × 1.2 Man: 8 tot. A: 2/7.62-mm mg'(I × 2) Electron Equipt: Radar: 1/Decca 110 M: 2 G.M. 12V71 TI diesels; 2 props; 1,120 hp Range: 700/22

SOLOMON ISLANDS (continued) PATROL BOATS AND CRAFT (continued)



Tulagi (01)

L. & L. Van Ginderen, 1984

SERVICE CRAFT

♦ 3 27-m landing craft Bldr: Carpenter Boatyard, Suva (ordered 1980)

LIGOMO III (L: 24-2-81) ULUSAGHE (L: 26-3-81) N. (L: . . .)

D: 195 grt/105 dwt S: 9 kts Dim: 27.0 × . . . × . . . M: 2 diesels; 2 props; . . . hp

♦ 2 140-grt oceanographic research craft Bldr: Murakima (L: 10-8-81)

SOLOMON ATU SOLOMON KARIQUA

SOMALIA

Somali Democratic Republic

Personnel (1985): 700 total

Merchant Marine (1984): 26 ships - 28,053 grt

GUIDED-MISSILE PATROL BOATS

◆ 2 ex-Soviet Osa-II class (transferred 12-75)



Osa-II class—under tow to Somalia

1976

D: 205 tons (240 fl) S: 35 kts Dim: $38.6 \times 7.6 \times 2.0$ A: 4/SS-N-2 Styx SSM — 4/30-mm AA (II \times 2) Electron Equipt: Radar: 2/Square Tie, 1/Drum Tilt IFF: 2 Square Head, 1/High Pole B

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34, 750/25 Man: 30 tot.

Remarks: In poor condition.

TORPEDO BOATS

• 4 Soviet Mol class



Somali Mol class - without torpedo tubes

1976



Somali Mol class - with torpedo tubes

1976

D: 170 tons (205 fl) S: 38 kts Dim: 39.0 × 7.6 × 1.7 A: 4/30-mm AA (II × 2) — 4/533-mm TT (I × 4) Electron Equipt: Radar: 1/Pot Head, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole B

M: 3 M504 diesels; 3 props; 15,000 hp Range: 450/34; 700/20

Man: 25 tot.

Remarks: New units transferred in 1976. Two did not have torpedo tubes. Boats with tubes are approximately 215 tons (fl), 36 kts max. In marginal operating condition.

Note: The last 4 Soviet P-6-class torpedo boats have been discarded.

PATROL BOATS

Note: A reported ordering of two Cormoran-class gunboats in 2-84 from Bazán, Cádiz, Spain did not materialize.

♦ 5 ex-Soviet Poluchat-I class (transferred 1968-69)

D: 80 tons (90 fl) S: 18 kts Dim: 29.86 × 5.8 × 1.5

A: 2/14.5-mm AA (II × 1)

M: 2 M50 diesels; 2 props; 2,400 hp Electron Equipt: Radar: 1/Spin Trough Range: 450/17; 900/10 Man: 20 tot.

AMPHIBIOUS WARFARE SHIPS

♦ 1 ex-Soviet Polnocny-A-class landing ship (transferred 12-76)

D: 770 tons (fl) S: 19 kts Dim: 73.0 × 8.6 × 1.9 A: 2/25-mm AA (II × 1) -2/140-mm RL (XVII × 2) Electron Equipt: Radar: 1/Don-2 Range: 900/18; 1,500/14 M: 2 diesels; 2 props; 4,000 hp Cargo: 180 tons Man: 35 tot.

◆ 4 ex-Soviet T-4-class landing craft (transferred 1968-69)

D: 70 tons (fl) S: 10 kts Dim: 19.0 × 4.3 × 1.0 M: 2 diesels; 2 props; 600 hp Man: 5 tot.

SOUTH AFRICA

Republic of South Africa

Personnel (1985): 6,646, including 763 officers, 4,883 enlisted, and 1,000 conscripts

Merchant Marine (1984): 278 ships — 712,220 grt (tankers: 3 ships — 37,597 grt)

Naval Aviation: An Air Force detachment is available to the Navy. 18 Piaggio P166 Albatross aircraft are used for patrol, and 11 Wasp helicopters are available to be embarked on the ships. There are also several Alouette-III helicopters, and Air Force Super Frélon helicopters now can operate from the replenishment ship Tafelberg. With the striking of the Shackleton long-range maritime patrol aircraft in 1984 and the arms embargo preventing replacements, a number of C-47 transports equipped with radars have been pressed into service. Two SafAir L-100 Hercules are to be chartered for search-and-rescue and pollution-control duties.

SUBMARINES

♦ 3 French Daphné class Bldr: Dubigeon, Nantes

Laid down L

| | AJULIUS CHOTTAL | de d | TIT OUT TO |
|----------------------------|-----------------|----------|------------|
| S 97 Maria Van Riebeeck | 14-3-68 | 18-3-69 | 22-6-70 |
| S 98 Emily Hobhouse | 18-11-68 | 24-10-69 | 25-1-71 |
| S 99 Johanna Van Der Merwe | 24-4-69 | 21-7-70 | 21-7-71 |

SUBMARINES (continued)



Maria Van Riebeeck (S 97)

S.A.N., 1978

D: 869 surf./1,043 sub. tons **S:** 13/15.5 kts **Dim:** $57.75 \times 6.75 \times 4.5$

A: 12/550-mm TT (8 fwd, 4 aft - no reloads)

Electron Equipt: Radar: DRUA-31 - Sonar: DUUA-1 active, . . . passive M: 2 SEMT-Pielstick 12PA4-135 diesels, 2 450-kw generator sets, electric drive; 2 props; 2,600 hp

Range: 4,300/7.5 (snorkel) Man: 6 officers, 41 men

Remarks: See French Daphné class. Being modernized with new sonar and combat data systems by Trivetts-UEC, Durban, 1985-86. Two embargoed Agosta-class submarines ordered from France in 1975 were sold by France to Pakistan.

Note: Plans to construct a new 1,400-1,500-ton-frigate design in South Africa have been held in abeyance, due to the embargo on arms-related imports. Details in last

1 British Whitby class

Bldr Laid down In serv. F 145 President Pretorius Yarrow, Scotstoun 21-11-60 4-3-64 28-9-62



President Pretorius (F 145)

L. & L. Van Ginderen, 8-85



President Pretorius (F 145) - note stern extension L. & L. Van Ginderen, 8-85

D: 2,250 tons (2,800 fl) **S**: 29 kts **Dim**: 114.00 (100.73 pp) \times 12.5 \times 5.2 (fl) A: 2/114-mm Mk 6 DP (II × 1) -2/40-mm AA (I × 2) -6/324-mm Mk 32 ASW TT (III × 2) — 1/Mk 10 Limbo mortar (III × 1) — 1/Wasp helicopter (Mk 44 torpedoes)

Electron Equipt: Radar: 1 U.K. Type 293M, 1/Thomson-CSF Jupiter, 1/Elsag NA 9C fire-control

Sonar: 1/177, 1/174 - EW: UA-8, UA-9 intercept, FH-12 D/F

M: 2 double-reduction GT; 2 props; 30,000 hp Electric: 1,140 kw Boilers: 2 Babcock & Wilcox; 38.7 kg/cm², 454°C Fuel: 370 tons Range: 2,100/26; 4,500/12 Man: 13 officers, 190 men

REMARKS: Modernized at Simonstown, 1971-77. Jupiter is an export version of the French Navy DRBV-23, L-band radar. Sisters President Steyn (F 147) to reserve 1981, stricken 1983; President Kruger (F 146) lost in collision with oiler Tafelberg 18-2-82.

GUIDED-MISSILE PATROL BOATS

♦ 12 Israeli Reshev ("Minister") class

| The contract of the contract o | Carrows Brownson and | | |
|--|-------------------------|----------|----------|
| | Bldr | L | In serv. |
| P 1561 JAN SMUTS | Israeli SY, Haifa | 2-77 | 9-77 |
| P 1562 P.W. Botha | Israeli SY, Haifa | 9-77 | 12-77 |
| P 1563 Frederick Creswell | Israeli SY, Haifa | 1-78 | 6-78 |
| P 1564 JIM FOUCHE | Sundock Austral, Durban | 9-78 | 12-78 |
| P 1565 Franz Erasmus | Sundock Austral, Durban | 3-79 | 7-79 |
| P 1566 OSWALD PIROW | Sundock Austral, Durban | 9-79 | 4-3-80 |
| P 1567 Hendrik Mentz | Sundock Austral, Durban | 26-3-82 | 11-2-83 |
| P 1568 Kobie Coetzee | Sundock Austral, Durban | 3-9-82 | 11-2-83 |
| P 1569 Magnus Malan | Sundock Austral, Durban | 25-11-82 | 6-83 |

| P 1570 N | Sundock Austral, Durban | 1983 |
|----------|-------------------------|----------|
| P 1571 N | Sundock Austral, Durban | 1984 |
| P 1572 N | Sundock Austral, Durban | 1984 |



Jan Smuts (P 1561) — note spherical EW radomes

L. & L. Van Ginderen, 8-85



South African Reshev—with 6 Skorpioen

S.A.N., 1984

D: 415 tons (450 fl) S: 32 kts Dim: 58.1 × 7.6 × 2.4

A: 6/Skorpioen SSM (I × 6) -2/76-mm OTO Melara DP (I × 2) -2/20-mm AA $(I \times 2) - 4/12.7$ -mm mg $(II \times 2)$

Electron Equipt: Radar: 1/Thomson-CSF THD-1040 Neptune, 1/Selenia RTN-10X Orion

EW: Elta MN-53 passive intercept, 4 chaff RL

M: 4 MTU 16V956 diesels; 4 props; 14,000 hp Range: 1,500/30; 5,000/15 Man: 7 officers, 40 men

Remarks: First six ordered 1974. The second six were ordered 15-11-77. Carry 500 rds 76-mm ammunition. Skorpioen is a license-built version of the Israeli Gabriel II anti-ship missile. All named for former Ministers of Defense. The name Frank Chappel has also been reported.

PATROL BOATS

♦ 1 former yacht Bldr: . . . , Italy

P. . . ORYX (ex-Caroline)

Remarks: Chartered and refitted 1981 as a patrol ship for duty off the coast of Namibia. No data available.

 1 locally designed Bldr: . . . , South Africa (In serv. 1976)

P 1558



P 1558 - now has twin 20-mm AA aft

S.A.N., 1981

D: 80 tons (fl) **S**: . . . **Dim**: 29.5 (27.0 pp) \times 5.3 \times 1.7 A: 1/40-mm AA -2/20-mm AA (II \times 1) -2/12.7-mm mg (I \times 2)

Electron Equipt: Radar: 1/Decca 926 M: 2 diesels; 2 props; . . . hp

Remarks: Intended as a prototype for series production for a class that was not built.

PATROL BOATS (continued)

• 5 British "Ford" class

| | Bldr | In serv |
|---------------------------------|-------------------------|---------|
| P 3105 GELDERLAND (ex-Brayford) | A. & J. Inglis, Glasgow | 30-8-54 |
| P 3120 Nautilus (ex-Glassford) | R. Dunstan, Thorne | 23-8-55 |
| P 3125 Rijger | Vosper, Portsmouth | 1958 |
| P 3126 HAERLEM | Vosper, Portsmouth | 1959 |
| P 3127 Oosterland | Vosper, Portsmouth | 1959 |



Rijger (P 3125)

S.A.N., 1978



Haerlem (P 3126) - white-painted, buff stacks as survey ship

S.A.N., 1978

D: 120 tons (160 fl) S: 15 kts Dim: 35.7 × 6.1 × 2.1 A: 1/40-mm AA Electron Equipt: Radar: 1/975

M: 2 Paxman YHAXM diesels; 500 hp each; 1 Foden FD-6 diesel, 100 hp; 3 props

Fuel: 23 tons Man: 19 tot.

Remarks: P 3126 has been fitted as a hydrographic ship and disarmed. P 3125 and P 3127 still carry two depth-charge racks. P 3120 is manned by the Citizens Force. P 3126 and P 3127 have fin stabilizers.

♦ 4 ex-British "Ton"-class former minesweepers

| | Bldr | L |
|-----------------------------------|------------------------|---------|
| P 1556 PRETORIA (ex-Dunkerton) | Goole SB Co. | 8-3-54 |
| P 1557 KAAPSTAD (ex-Hazelton) | Cook, Welton & Gemmell | 6-2-54 |
| P 1559 WALVISBAAI (ex-Packington) | Harland & Wolff | 3-7-58 |
| P 1560 DURBAN | Camper & Nicholson | 12-6-57 |



Durban (P 1560, ex-M 1499)

L. & L. Van Ginderen, 8-85

Remarks: Data as for minesweepers below, except that P 1556 and P 1557 have 2 Mirrlees JVSS-12 diesels of 1,250 hp each. Manned by Citizens Force, having been redesignated 1977-78. Retain most sweep gear and could be used to sweep moored and mechanical mines. All carry Gemini inspection dinghies. P 1556 and P 1557 constitute the Naval Training Command Squadron.

PATROL CRAFT

• 24 Namicurra class Bldr: . . . , South Africa (In serv. 1980-81)

Y 1051-Y 1074



Namicurra class

S.A.N., 1984

D: 5 tons (fl) S: 30 kts Dim: 9.0 × . . . × . . . A: 1/12.7 mm mg — 2/7.62-mm mg M: 2 diesels Man: 4 tot.

REMARKS: Radar-equipped, glass-reinforced, plastic-hulled harbor craft, which can be land-transported on trailers.

MINE WARFARE SHIPS

♦ 6 British "Ton"-class minesweepers and minehunters*

| | Bldr | L |
|---------------------------------------|------------------------|----------|
| M 1207 Johannesburg (ex-Castleton) | J.S. White | 26-8-58 |
| M 1210 Kimberley (ex-Stratton)* | Dorset Yacht | 29-7-57 |
| M 1212 PORT ELIZABETH (ex-Dumbleton)* | Harland & Wolff | 8-11-57 |
| M 1213 Mosselbaai (ex-Oakington)* | Harland & Wolff | 10-12-58 |
| M 1215 EAST LONDON (ex-Chilton) | Cook, Welton & Gemmell | 15-7-57 |
| M 1498 Windhoek | Thornycroft | 28-6-57 |



Johannesburg (M 1207)

L. & L. Van Ginderen, 8-85

D: 370 tons (425 fl) S: 15 kts (cruising) Dim: 46.33 (42.68 pp) × 8.76 × 2.5

A: 1/40-mm AA - 1/20-mm AA

Electron Equipt: Radar: 1/978 (*1/1006) — Sonar: (*only): 1/193M M: 2 Paxman Deltic 18A-7A; 2 props; 3,000 hp Fuel: 45 tons Range: 2,300/13; 3,000/8 Man: 27 tot (*36)

REMARKS: Four have been redesignated as patrol boats, see above. M 1210, M 1212, and M 1213 have been converted as minehunters, with Type 193M minehunting sonar, Type 1006 radar, two PAP-104 remote-controlled minehunting devices, and minedisposal diver facilities. All now have enclosed bridges and tripod masts. Single 80-cal 20-mm AA has replaced the twin 70-cal. mount aft.

AUXILIARY SHIPS

1 British Hecla-class hydrographic ship

| | Bldr | Laid down | L | In serv. |
|--------------|-------------------|-----------|---------|----------|
| A 324 Protea | Yarrow, Scotstoun | 20-7-70 | 14-7-71 | 23-5-72 |

D: 2,750 tons (fl) S: 15.5 kts Dim: 71.6 × 14.9 × 4.6 M: 4 Paxman Ventura diesels; 1 CP prop; 4,800 hp Fuel: 500 tons Range: 12,000/11 Man: 123 tot.

Remarks: Ordered 7-11-69. Hull reinforced for navigating in ice. Bow-thruster and anti-roll tanks fitted. Helicopter hangar and flight deck for one Wasp. The "Ford"class patrol boat Haerlem (P 3126) is equipped for inshore survey duties; see above.

AUXILIARY SHIPS (continued)



Protea (A 324) - white hull, buff stack

S.A.N., 1984

• 1 fleet replenishment ship Bldr: Nakskovs Skibsvaert, Denmark (L: 20-6-58)

A 243 TAFELBERG (ex-Danish tanker Annam)



Tafelberg (A 243)

S.A.N., 1985

D: Approx. 27,000 tons (fl) S: 15 kts Dim: 170.6 × 21.9 × 9.2

A: 2/40-mm AA $(I \times 2) - 2/20$ -mm AA $(I \times 2)$

Electron Equipt: 2/. . . nav.

M: 1 Burmeister & Wain diesel; 1 prop; 8,420 hp

Man: 100 tot.

Remarks: 12,499 grt/18,980 dwt (prior to 1984). Purchased and refitted in Durban, 1965-67. Two refueling stations and one solid-stores transfer station per side. Modernized 1983 to 16-7-84, with flight deck amidships, a hangar for two Super Frélon helicopters for search-and-rescue duties, and a hospital facility; one refueling station per side deleted. Now scheduled to operate until 1999.

Note: Plans were announced 22-9-84 to build a "12,600-ton" replenishment oiler at Durban for delivery in 1986(!). The 20-kt ship was to have had helicopters for replenishment and search-and-rescue duties. The ship had not been laid down as of 12-85.

• 1 British "Bar"-class net-tender

Bldr Laid down In serv. P 285 Somerset (ex-Barcross) Blyth Dry Dock 21-10-41 14-4-42 15-4-41

D: 750 tons (960 fl) S: 11.7 kts Dim: 52.96 × 9.8 × 4.62 (aft) M: 1 set triple-expansion reciprocating steam; 1 prop; 850 hp

Boilers: 2 Fuel: 214 tons Range: 3,100/10

Somerset (P 285) S.A.N., 1984

♦ 1 torpedo-recovery and diver-training ship Bldr: Dorman Long, Durban P 3148 FLEUR (In serv. 3-12-69)



Fleur (P 3148)

D: 220 tons (257 fl) S: 14 kts Dim: 35.0 × 7.5 × 3.4 M: 2 Paxman-Ventura diesels; 2 props; 1,400 hp

Man: 4 officers, 18 men

Remarks: Ramp at stern for torpedo recovery. Divers' decompression chamber. Refitted by 1981 with fantail area enlarged, new stacks.

Bldr: Fred Nicholls, Durban (In serv. 1964) • 1 training craft

D: 75 tons (fl) S: 9.5 kts Dim: 19.2 × 6.0 × . . .

M: 2 Foden FD-6 diesels; 2 props; 200 hp

Remarks: Wooden-hulled fishing-cutter type. Serves as tender at Naval College, Gordon's Bay.

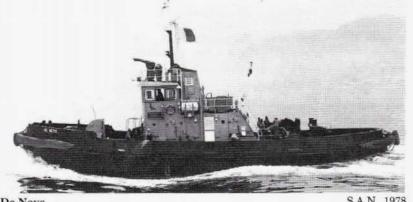
1 seagoing tug

Bldr In serv. DE MIST Dorman Long, Durban 21-12-78 12 - 78

D: 275 grt S: 12.5 kts Dim: 34.3 (32.3 pp) × 7.8 × 3.4 M: 2 Mirrlees-Blackstone ESL-8-MGR diesels; 2 props; 2,440 hp

• 1 large harbor tug

Bldr In serv. L DE NEYS Globe Engineering, Capetown 7-69 23-7-69



De Nevs

S.A.N., 1978

SOUTH AFRICA (continued) AUXILIARY SHIPS (continued)

D: 282 tons (fl) S: 11.5 kts Dim: 28.6 (27.0 wl) × 8.1 × 3.6

M: 2 Lister-Blackstone ERS-8-M diesels; 2 Voith-Schneider vertical cycloidal props; 1,268 hp

Man: 10 tot.

REMARKS: 14-ton max. bollard pull.

1 large harbor tug

Bldr: Globe Engineering, Capetown

DE NOORDE (L: 12-61)



De Noorde

S.A.N., 1978

D: 170 grt S: 9 kts Dim: 34.2 × 8.2 × .

M: 2 Lister-Blackstone ERS-8-M diesels; 2 Voith-Schneider vertical cycloidal props; 1,268 hp

♦ 1 catamaran trials craft (In serv. 4-80)

SHIRLEY T.

Remarks: A 10.8-m prototype for a 50-m fast combatant design concept.

AIR SEA RESCUE BOATS

Bldr: Groves & Gutteridge, Cowes, U.K. (In serv. 2 Fairey Tracker class 1973)

P 1554 P 1555

D: 31 tons (fl) **S:** 29 kts **Dim:** 19.25 × 4.98 × 1.45

M: 2 G.M. 12V71 diesels; 2 props; 1,120 hp Range: 650/20 Man: 11 tot.

Bldr: Krogerwerft, Rendsburg (In serv. 1961-62) 2 German-built

P 1551 P 1552



P 1551 - now has smaller radar

S.A.N., 1978

D: 67 tons (73 fl) S: 30 kts Dim: 28.8 (27.9 pp) × 5.0 × 1.6

A: 1/12.7-mm mg Electron Equipt: Radar: 1/. . . nav. M: 2 Maybach 12-cyl. diesels; 2 props; 3,000 hp Range: 600/25 Man: 8 tot.

DEPARTMENT OF TRANSPORT

◆ 1 Antarctic survey and supply ship

Laid down In serv. Bldr Mitsubishi, Shimonoseki 14-6-77 30-9-77 31-1-78 AGULHAS

D: 3,035 dwt S: 14 kts Dim: 109.2 (100.0 pp) × 18.0 × 5.8 M: 2 Mirrlees-Blackstone K-6 Major diesels; 1 prop; 6,000 hp

Range: 8,200/14 Man: 40 crew + 92 scientists/passengers

REMARKS: Manned by the South African Navy. Twin helicopter hangar. Red hull, white upperworks.

4 corvettes 4 ATREVIDA

Spanish State

◆ 1 (+1) aircraft carrier

1 INDEPENDENCE

8 submarines

• 10 destroyers

1 ROGER DE LAURIA

5 GEARING FRAM-I

♦ 11 (+5) frigates

6 Descubierta

5 BALÉARES

0 (+5) OLIVER HAZARD PERRY

4 AGOSTA

4 DAPHNÉ

4 FLETCHER

(+1) PRINCIPE DE ASTURIAS

ASW weapons NAVAL AVIATION: Five single-seat AV-8A and two two-seat TAV-8A were delivered in

1976 for service in the Dedalo; subsequently, two of the aircraft, named Matador in Spanish service, have been lost. Five more AV-8A were ordered for delivery in 1980-81. In 1985, 9 AV-8A and the 2 TAV-8A were in service, and 12 AV-8B were to be ordered in 1986.

Personnel (1985): 52,510, including 5,212 officers, 37,901 men; plus 12,196 Naval

WARSHIPS IN SERVICE OR UNDER CONSTRUCTION As Of 1 January 1986

(tankers: 110 ships - 3,877,230 grt)

Tons

13,000

Tons

(surfaced)

1,490

3,012

2,425

2,080

2,769

1,270

3,015

977

870 Tons Main armament

4/20-mm 18-22 aircraft

22/40-mm 20 aircraft

4/550-mm TT

weapons 4/127-mm, 1/ASROC

system

weapons

12/550-mm TT

6/127-mm DP, ASW

4 or 5/127-mm, 0 or

6/76.2-mm, ASW

1/76-mm, 1 Standard SAM

system, 2 helicopters

1/76-mm, 1/Sea Sparrow

1/127-mm, 1/ASROC

system, 1/Standard

system, ASW weapons

1/76.2-mm DP, 3/40-mm,

Infantry, including 696 officers, and 11,500 enlisted; 9,397 civilians.

L

1982

1943

1981-84

1972-74

1968

1945

1942-44

1984-

1975-79

1970-72

1955-56

MERCHANT MARINE (1984): 2,529 ships - 7,004,852 grt



AV-8A Matador on Dedalo

The Arma Aerea de la Armada also operates 12 Agusta-Bell 212 (with SS-12 missiles), 10 Bell 47G, 15 Sikorsky SH-3D/G Sea King (with AS-12 missiles), and 11 Hughes 369-HM (560M) Cayuse helicopters plus 2 Cessna Citations, 2 Piper Comanche and 2 Piper Twin Comanche liaison aircraft. Six U.S. SH-60B Seahawk LAMPS III helicopters were ordered 1983; 12 more may be ordered later. Four of the Sea Kings are to be provided Searchwater air/surface-search radar.

The search-and-rescue service (Servicio de Busqueda y Salvamento) received 3 Fokker F-27 SAR aircraft in 1979 for coastal surveillance; they carry Litton APS-504V radar. Ten AS.332F Super Puma helicopters for rescue duties and 2 as VIP

transports were delivered 21-1-84. The Spanish Air Force performs a maritime surveillance role, using six Lockheed P-3A and four P-3C Orion. Nine Casa C-212 Aerocar with APS-128 radars were delivered 1982-84 for search-and-rescue work.

WEAPONS AND SYSTEMS

Except for naval guns, which are domestically designed and manufactured, most of the weapon systems in use are of American or French make. Twenty-five U.S. Harpoon missiles were ordered 1985 for delivery 1987-90; 55 Harpoons had been delivered earlier. However, an antiaircraft/anti-missile point-defense system of Spanish origin is in de-

WEAPONS AND SYSTEMS (continued)

velopment. Called Meroka, it consists of two rows of six 20-mm Oerlikon guns, whose characteristics are:

Length: 120 calibers Round weight: 320 gr. all-up Muzzle velocity: 1,200m/sec Projectile weight: 102 gr.

Maximum rate of fire: 9,000 rounds/minute (per mount)

Maximum effective range: 2,000 m

Meroka uses a Lockheed Electronics AN/PVS-2 Sharpshooter x-band monopulse radar on the mount, with target designation via the search radar and a Selenia PDS-10 TDS console. Current models carry 720 rounds on-mount; later versions will have 2,160 rds.

AIRCRAFT CARRIERS

♦ 1 new construction

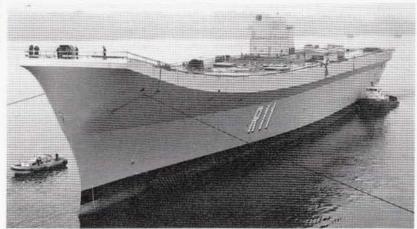
Bldr Laid down L In serv.

R 11 Principe De Asturias Bazán, el Ferrol 8-10-79 22-5-82 4-87

(ex-Canarias, ex-Almirante Carrero Blanco)

D: 15,150 tons (fl) S: 26.27 kts Dim: 195.1 (187.5 pp) × 24.4 (30.0 flight deck) × 6.7

A: 4/Meroka 20-mm gun systems (XII × 4) — 20 aircraft (6-8 AV-8B and 12-14 SH-60B or SH-3D/G)



Principe de Asturias (R 11) - at launch

Bazán, 5-82

Electron Equipt: Radar: 1/SPS-55, 1/SPS-52C, 1/SPN-35A air control, 4/PVS-2 f.c.

TACAN: URN-25

EW: Nettunel intercept, Mk 36 Mod. 2 SRBOC chaff (VI × 4)

M: 2 G.E. LM-2500 gas turbines; 1 prop; 46,400 hp (plus 2/800-hp retractable Pleuger auxiliary props, electric drive)

Electric: 7,500 kw Range: 6,500/20

Man: 774 total -88-94 officers, 145-153 senior petty officers, 539-542 men

Remarks: Ordered 29-6-77. Design is essentially that of the final version of the U.S. Navy's Sea Control Ship concept, with a 12-degree ski-jump bow added. The flight deck is 175.3 × 29 m and is served by two elevators, one at the extreme aft end. Takeoff pattern angled to starboard. There are 3 Allison 501-K17 gas turbine-driven 2,500-kw generators. Has two pair Denny-Brown fin stabilizers. LINK 11 and LINK 14 data link and U.S. Fleet SATCOMM installed. SPS-52C is to be replaced by SPS-52D later. Has U.S. Prairie/Masker bubbler noise suppression system, SLQ-25 Nixie towed torpedo decoy. Scheduled to commence sea trials 6-86.

♦ 1 ex-U.S. Independence-class light aircraft carrier Bldr: New York SB

R 01 Dedalo (ex-Cabot, AVT 3, ex-CVL 28, ex-Wilmington, CL 79)

Laid down L In serv. 4-4-43 24-7-43

D: 13,000 tons (16,416 ft) S: 31 kts (trials)

Dim: 188.35 (182.9 wl) × 21.87 (hull) 31.7 (flight deck) × 7.2 (8.1 max.)

A: 22/40-mm AA (IV × 1, II × 9) — about 20 aircraft, 7 of which are AV-8A

Electron Equipt: Radar: 1/SPS-10, 1/SPS-40A, 1/SPS-8, 1/SPS-6C, 4/Mk 34

fire-control

TACAN: URN-20 - EW: WLR-1

M: 4 sets GT; 4 props; 100,000 hp

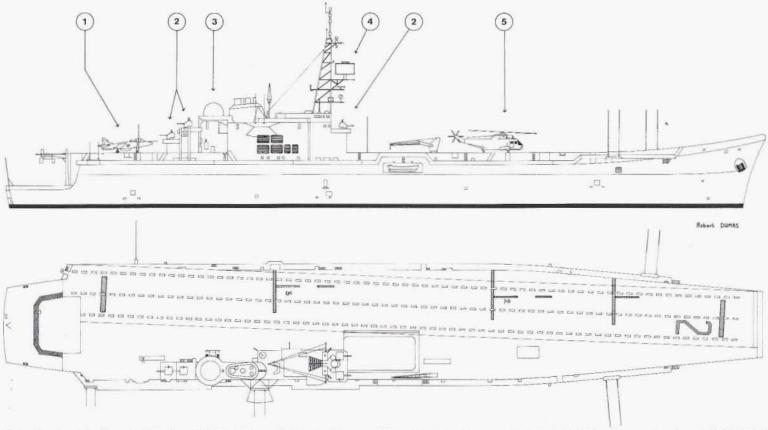
Boilers: 4 Babcock & Wilcox; 39.8 kg/cm², 454°C Electric: 2,400 kw Fuel: 1,800 tons Armor: Partial belt: 37-127 mm Range: 7,200/15

Man: 51 officers, 1,049 men



Dedalo (R 01)

Spanish Navy



Principe de Asturias 1. Matador V/STOL fighter 2. Meroka AA guns (Note: Final location may differ) 3. SPN-35 air-control radar 4. SPS-52 3-D radar 5. Sea King helicopter

AIRCRAFT CARRIERS (continued)



Dedalo (R 01)

16 Flot., French Navy, 1980

Remarks: Ended service in the U.S. Navy as an aviation transport (AVT 3). Transferred on five-year loan on 30-8-67 and purchased in 12-73. Redesignated from PH (portahelicópteros) to PA (Portaaviones) on 28-9-76, when AV-8A V/STOL fighters were added to her complement. The flight deck is 166.1×32.9 m (max.). Two elevators. Four Mk 63 radar gunfire-control systems and seven Mk 51 Mod. 2, optical gunfire control installed. Did not receive SPS-52B radar in place of SPS-8 heightfinder as planned. Forward quad 40-mm AA now removed. She is supposed to be given the Meroka point-defense gun system and will probably be retained even after the completion of Principe de Asturias.

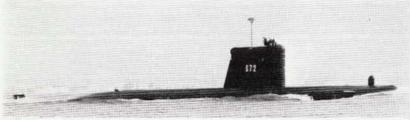
SUBMARINES

♦ 0 (+4) "Submarino Biparto" program

Bldr: Bazán, Cartagena

Remarks: A cooperative design effort between Bazán and DCN/Dubigeon, France, for a diesel-electric hunter-killer submarine, the first of which would be delivered in 1992. Intended to have 70 days' endurance on 210 tons of fuel, the submarines would have four or six TT and carry 20 weapons, including SM 39 Exocet on Sub-Harpoon anti-ship missiles.

| ♦ 4 Agosta class | azán, Cartage | na | |
|------------------|---------------|----------|----------|
| | Laid down | L | In serv. |
| S 71 GALERNA | 5-9-77 | 5-12-81 | 17-1-83 |
| S 72 SCIROCO | 1978 | 13-11-82 | 5-12-83 |
| S 73 MISTRAL | 30-5-80 | 14-11-83 | 5-6-85 |
| S 74 TRAMONTANA | 18-12-81 | 30-11-84 | 10-85 |



Sciroco (S 72)

G. Gyssels, 5-84

D: 1,230/1,490/1,750 tons S: 12 kts (surf.)/20.5 kts (sub.)

Dim: $67.90 \times 6.8 \times 5.4$

A: 4/550-mm TT (rapid reload - 20 F 17, E 18, and L 5 torpedoes)

Electron Equipt: Radar: 1/DRUA-33

Sonar: DUUA-2A, DUUA-2B active, DSUV-22 passive, Elédone intercept

M: 2 SEMT-Pielstick 16 PA4 185 diesel generator sets, 850 kw each; 4,600-hp main engine; 1/23-kw cruising engine; 1 prop Fuel: 185 tons Range: 17.5/1 hr. (sub.); 9,000/10 (snorkel)

Man: 6 officers, 44 men

REMARKS: See also Agosta class in section on France. As with the Daphné class, being built with French technical assistance. Agreement signed 6-2-74; first two ordered 9-5-75, second pair 29-6-77. Can dive to 300 m. Endurance: 145 days.

| ♦ 4 French Da | ◆ 4 French Daphné class | | án, Cartagena |
|---------------|-------------------------|----------|---------------|
| | Laid down | L | In serv. |
| S 61 DELFIN | 13-8-68 | 25-3-72 | 3-5-73 |
| S 62 TONINA | 1969 | 3-10-72 | 10-7-73 |
| S 63 MARSOPA | 19-3-71 | 15-3-74 | 12-4-75 |
| S 64 NARVAL | 1972 | 14-12-74 | 22-11-75 |

D: 865/1,042 tons S: 12.5/15.5 kts Dim: 57.78 × 6.75 × 4.60

A: 12/550-m TT (8 fwd, 4 aft) - no reloads

Electron Equipt: Radar: 1/DRUA-31 (with ECM)

Sonar: DUUA-1-ABL active, DSUV passive (see remarks)



Narval (S 64)

L. & L. Van Ginderen, 10-84



Delfin (S 61) - in refit, with new sonar dome

L. & L. Van Ginderen, 10-84

M: 2 SEMT-Pielstick PA1 450-kw diesel generators; 2 props; 2,000 hp Man: 6 officers, 41 men

Remarks: Built with French technical assistance; agreement made on 16-7-66. 300 m. Beginning with S 61, refitting at Cartagena with DUUA-2A forward (retain DUUA-1D aft), DSUV-22 passive sonar and updated torpedo fire-control system; modified units have large bow sonar dome, like French Navy Daphnés. S 61 and S 62 have been completed.

Note: The two ex-U.S. Navy GUPPY-IIA-class submarines have been stricken: Isaac Peral (S 32, ex-Ronquil, SS 396) on 2-6-84, and Narciso Monturial (S 35, ex-Jallao, SS 368) on 31-12-84.

DESTROYERS

Note: There are tentative plans to construct two destroyers in the late 1980s, possibly of the U.S. Spruance class.

 1 Roger de Lauria class Bldr: Bazán, el Ferrol, Cartagena

Laid down Relaunch In serv. 10-9-70 D 43 MARQUES DE LA ENSENADA 4-9-51 15-7-59 22-2-68

D: 3,012 tons (3,785 fl) S: 28 kts (31.5 on trials)

Dim: 116.68 (110.8 pp) × 12.5 × 6.5 (max.)

A: 6/127-mm DP (II × 3) - 6/324-mm Mk 32 ASW TT (III × 2) - 2/ASW fixed Mk 25 TT for Mk 37 torpedoes

Electron Equipt: Radar: 1/Decca RM 426, 1/SPS-10B, 1/SPS-40, 1 Mk 25, 1/Mk 35

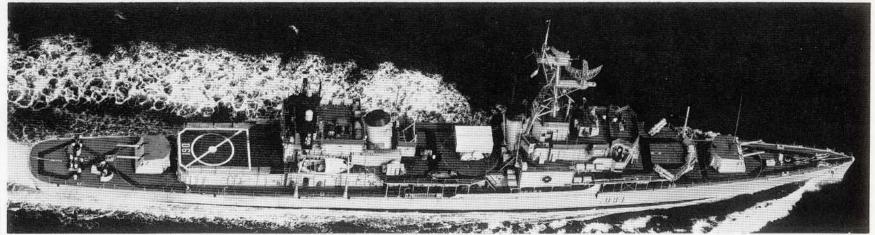
Sonar: 1/SQS-32, 1/SQA-10 VDS - EW: WLR-1

M: 2 sets Rateau-Bretagne GT; 2 props; 60,000 hp Electric: 1,900 kw Boilers: 3 three-drum; 35 kg/cm², 375°C Fuel: 673 tons

Range: 4,500/15 Man: 20 officers, 235 men

REMARKS: Widened and lengthened during reconstruction after original launching in order to eliminate defects found in the Oquendo prototype; completion consequently delayed. U.S. semiautomatic, 38-caliber guns, 1 Mk 37 and 1 Mk 56 radar gun-control system. Oquendo was stricken on 2-11-78. Helicopters not currently carried. May receive Meroka 20-mm AA gun system. Badly damaged by a terrorist bomb 2-10-81; repaired at considerable expense, in part by cannibalizing sister Roger de Lauria (D 42), which was stricken 15-1-82. Despite being plagued with continued boiler problems, is not scheduled for disposal until the 1990s.

DESTROYERS (continued)



Churruca (D 61)

VF-102, U.S., Navy, 9-82

♦ 5 ex-U.S. Gearing FRAM-I class

| | Bldr | Laid down | L | In serv. |
|---|-------------------------------|-----------|---------|----------|
| D 61 CHURRUCA (ex- Eugene A. | Federal SB, Newark | 17-8-74 | 18-3-45 | 8-6-45 |
| Greene, DD 711) D 62 Gravina (ex-Furse, DD 882) | Consolidated, Orange, Tex. | 23-9-44 | 9-3-45 | 10-7-45 |
| D 63 Mendez Nuñez (ex-O'Hare, DD 889) | Consolidated, Orange, Tex. | 27-1-45 | 22-6-45 | 29-11-45 |
| D 64 Langara (ex- Leary, DD 879) | Consolidated, Orange, Tex. | 11-8-44 | 20-1-45 | 7-5-45 |
| D 65 BLAS DE LEZO | Bath Iron Works | 26-3-45 | 30-7-45 | 2-11-45 |

D: 2,425 tons light (3,520 fl) S: 31 kts

Dim: 119.02 × 12.45 × 6.4 (sonar) 4.45 (hull)

A: 4/127-mm 38-cal. (II × 2) - 1/ASROC Mk 116 ASW RL (VIII × 1; 17 missiles) - 6/324-mm Mk 32 ASW TT (III × 2)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-29, (D 61, D 62; SPS-40), 1/Mk 25 Sonar: 1/SQS-23—TACAN: D 65 only; SRN-15 EW: WLR-1, ULQ-6 (not in D 64)

M: GT; 2 props; 60,000 hp Electric: 1,100 kw Boilers: 4 Babcock & Wilcox; 39.8 kg/cm2; 454°C

Fuel: 650 tons Range: 2,400/25; 4,800/15 Man: 17 officers, 257 men

Remarks: D 61 and D 62 were loaned on 31-8-72, and D 63 to D 65 on 31-10-73. All purchased outright on 17-4-78. D 65 has both her 127-mm mounts forward and no ASROC. Mk 37 fire-control system for guns, Mk 114 ASW f.c.s. Carried Hughes 369 manned helicopter in place of original drones; all but D 65 no longer do so. Scheduled for disposal beginning 1988-89.

4 ex-U.S. Fletcher class

| E-money | Bldr | Laid down | L | In serv. |
|--|-----------------------------|-----------|----------|----------|
| D 22 ALMIRANTE FERRANDIZ ex-David W. Taylor, DD 551) | Gulf SB, Orange, Texas | 12-6-41 | 4-7-42 | 18-9-43 |
| D 23 ALMIRANTE VALDES (ex-Converse, DD 509) | Bath Iron Works, Me. | 23-2-42 | 30-8-42 | 20-11-42 |
| D 24 ALCALA GALIANO (ex- Jarvis, DD 799) | Todd, Seattle, Wash. | 7-6-43 | 14-2-44 | 3-6-44 |
| D 25 JORGE JUAN (ex- McGowan, DD 678) | Federal SB, Kearny, N.J. | 30-6-43 | 14-11-43 | 20-12-43 |

D: 2,850 tons (3,050 fl) **S**: 30-32 kts **Dim**: $114.85 \times 12.03 \times 5.5$

A: D 22: 5/127-mm DP (I × 5) -6/40-mm AA (II × 3) -6/20-mm AA (I × 6) -5/533-mm TT (V × 1) — 2/Mk 11 Hedgehogs — 6/Mk 6 d.c. mortars —

D 23 to D 25: 4/127-mm DP (I × 4) -6/76.2-mm AA (II × 3) -5/533-mm TT $(V \times 1) - 2/Mk$ 11 Hedgehogs -4/Mk 6 d.c. mortars

 $(I \times 4) - 1/d.c.$ rack Electron Equipt: Radar: 1/SPS-10, 1SPS-6C, 2/Mk 25; D 23-25 also: 1/Mk 35, 2/Mk 34

Sonar: SQS-29 series (SQS-4 on D 22) EW: D 23, 24: BLR-1

M: 2 sets G.E. (D 21, 22; Westinghouse) GT; 2 props; 60,000 hp Electric: 580 kw Boilers: 4 Babcock & Wilcox; 39.8 kg/cm², 454 °C Fuel: 650 tons Range: 1,250/32; 4,400/15 Man: 17 officers, 273 men

Remarks: D 22 transferred on 15-5-57, D 23 on 1-7-59, D 24 on 3-11-60, and D 25 on 1-12-60. D 22 and 23 have high, "early Fletcher" bridges, the others low bridges. All have one Mk 37 gunfire-control system; D 23 to D 25 also have one Mk 56 and two Mk 63 gunfire-control systems, Mk 5 torpedo director. The quintuple 533-mm TT is being



Lepanto (D 21) -5/127-mm guns, no EW gear

Spanish Navy, 1984



Almirante Valdes (D 23) -4/127-mm, 6/76.2-mm guns

G. Gyssels, 6-83

replaced by two triple 324-mm ASW TT mounted on the main deck. All five of these very outdated ships were scheduled to be retired by 1985, but are now being extended, with disposal from 1987-1991. D 22 has been used in fisheries protection duties in the Canary Islands area. Sister Lepanto (D 21, ex-Capps, DD 550) stricken 12-85.

GUIDED-MISSILE FRIGATES

| ♦ 0 (+5) U.S. Oliver Hazard Perry | class | Bldr: Bazán, El | Ferrol |
|-------------------------------------|-----------|-----------------|----------|
| | Laid down | L | In serv. |
| F 81 SANTA MARIA (ex-Navarra) | 22-5-82 | 24-11-84 | 1986 |
| F 82 NUMANICIA (ex-Niña, ex-Murcia) | 11-83 | 10-85 | 1987 |
| F 83 Victoria (ex-Pinta, ex-Leon) | 8-84 | 8-86 | 1988 |
| F 84 N | | | |
| F 85 N | 2.2.2 | | |

 $\mathbf{D:} \ \ \mathbf{F} \ 81, \, 82; \, 2,769 \ tons \ light (3,658 \ fl); \ others: 2,851 \ tons \ light (3,740 \ fl)$

S: 29 kts Dim: 135.64 (F 83-85: 138.80) (125.90 wl) × 13.72 × 4.52 (8.6 max.)

A: 1/Mk 13, Mod. 4 missile launcher (8 Harpoon and 32 Standard SM-1 MR)

-1/76-mm OTO Melara DP - 1 or 2/Meroka 20-mm AA systems -6/324-mm Mk 32 ASW TT (III × 2) -2/ASW helicopters

Electron Equipt: Radar: 1/SPS-55, 1/SPS-49, 1/Mk 92 Mod. 2 fire-control system (with STIR) - TACAN: URN-25 Sonar: Raytheon 1160B hull-mounted; SQR-19A TASS EW: SLQ-32 (V)2; Mk 36 SRBOC RL (VI × 2)

GUIDED-MISSILE FRIGATES (continued)



Santa Maria (F 81) - at launch

Bazán, 11-84

M: 2 G.E. LM-2500 gas turbines; 1 CP prop; 41,000 hp (2/350-hp electric auxiliary propulsion motors)

Electric: 3,000 kw Range: 5,000/18 Fuel: 587 tons

Man: 13 officers, 188 men

Remarks: Although first three officially ordered on 29-6-77, little progress was made until 1981 on construction, the new carrier Principe de Asturias taking precedence. Will duplicate U.S. version except for close-defense AA gun system. Sonar essentially the same as the U.S. Navy's SQS-56. First two are "short-hull" version and will have to be back-fitted with longer, raked stern and RAST helicopter deck-handling system to handle SH-60B LAMPS-III helicopters; F 83 and later will get SSQ-28 LAMPS-III date link. Final full-load displacement may top 3,900 tons, as in U.S. units.

6 Descubierta class

| | Bldr | Laid down | L | In serv. |
|-----------------------|------------------|-----------|----------|----------|
| F 31 DESCUBIERTA | Bazán, Cartagena | 16-11-74 | 8-7-75 | 18-11-78 |
| F 32 DIANA | Bazán, Cartagena | 8-7-75 | 26-1-76 | 30-6-79 |
| F 33 INFANTA ELENA | Bazán, Cartagena | 26-1-76 | 14-9-76 | 12-4-80 |
| F 34 INFANTA CRISTINA | Bazán, Cartagena | 14-9-76 | 19-4-77 | 24-11-80 |
| F 35 CAZADORA | Bazán, el Ferrol | 14-12-77 | 17-10-78 | 20-7-81 |
| F 36 VENCEDORA | Bazán, el Ferrol | 1-5-78 | 27-4-79 | 27-3-82 |

D: 1,363 tons (1,575 fl) S: 26 kts Dim: 88.88 (85.8 pp) × 10.4 × 3.9 A: 1/Sea Sparrow SAM system (VIII × 1; 24 missiles) - 1/76-mm OTO Melara - 2/40-mm AA (I × 2) - 1/375-mm Bofors ASW RL (II × 1) - 6/324mm Mk 32 ASW TT (III × 2)



Infanta Elena (F 33)

L. & L. Van Ginderen, 10-85



Infanta Cristina (F 34)

S. Terzibaschitsch, 1981



Cazadora (F 35)

L. & L. Van Ginderen, 10-84

Electron Equipt: Radar: 1/H.S.A. ZW-06/2, 1/H.S.A. DA-05/2, 1/H.S.A. WM 25 fire-control

Sonar: Raytheon 1160B, Raytheon 1167 (VDS, last four) EW: Elettronica Beta passive system

M: 4 MTU-Bazán 16MA956 TB91 diesels; 2 CP props; 18,000 hp Electric: 1,810 kw Fuel: 250 tons Range: 6,100/18

Man: 10 officers, 106 men

Remarks: Design evolved from the Portuguese Navy's João Coutinho class, built by same yard. The first four were ordered on 7-12-73, the others on 25-5-76. Intended to receive 8 Harpoon SSM (IV × 2) between bridge superstructure and Y-shaped stacks, aimed athwartships. All are scheduled to get 1/20-mm Meroka in place of upper 40-mm, and two chaff launchers. Plans call for backfitting Raytheon Type 1167 VDS. Have fin stabilization, plus U.S. Prairie/Masker bubble system to reduce radiated noise below the waterline. Can accommodate thirty troops. Carry 600 rounds 76-mm gun ammunition. Have SEWACO weapons control system. Eight improved units with gas-turbine propulsion (described in previous edition) were to follow; they have been delayed in programming. Sisters Centinella (F 37) and Serviola (F 38) were sold to Egypt in 1982, prior to completion; another sister has been built for Morocco.

| ♦ 5 Baleares class | Bldr: | Bazán, | el | Ferrol |
|--------------------|-------|--------|----|--------|
| | | | | |

| | Laid down | L | In serv. |
|------------------|-----------|----------|----------|
| F 71 BALEARES | 31-10-68 | 20-8-70 | 24-9-73 |
| F 72 Andalucia | 2-7-69 | 30-3-71 | 23-5-74 |
| F 73 CATALUÑA | 20-8-70 | 3-11-71 | 16-1-75 |
| F 74 ASTURIAS | 30-3-71 | 13-5-72 | 2-12-75 |
| F 75 Estremadura | 3-11-71 | 21-11-72 | 10-11-76 |

D: 3,015 tons (4,177 fl) S: 27/28 kts

Dim: 133.59 (126.5 pp) × 14.33 × 4.6 (7.01 over sonar)

A: 8/Harpoon SSM (IV × 2) - 1/Mk 22 guided-missile launcher (16 Standard SM-1 MR) - 1/127-mm Mk 42 DP - 1/ASROC Mk 116 ASW RL (VIII × 1, plus reloads) - 4/324-mm Mk 32 fixed ASW TT (I × 4) - 2/fixed Mk 25 ASW TT for Mk 37 torpedoes

Electron Equipt: Radar: 1/Decca 1226, 1/SPS-10, 1/SPS-52A, 1/SPG-51C, 1/SPG-53B—TACAN: SRN-15A

Sonar: 1/SQS-23 (hull), 1/SQS-35V (VDS)

EW: Elsa Mk 1000 passive system

M: 1 set Westinghouse GT; 1 prop; 35,000 hp Electric: 3,000 kw

Boilers: 2 Combustion-Engineering; 84 kg/cm², 510°C

Fuel: 750 tons Man: 15 officers, 241 men

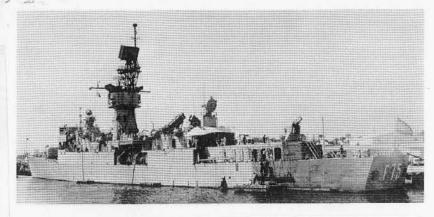
Remarks: Built with American aid (agreement of 31-5-66) as U.S. DEG 7 to DEG 11. The Mk 74 missile fire-control system can use both the Mk 73 director (with SPG-51C radar) and Mk 68 director (with SPG-53B) to control two Standard missiles; the Mk 68 is also used to control the 127-mm gun. The ships have the Mk 114 digital ASW computer to control ASROC and ASW-torpedo firing. No less than forty-one ASW torpedoes of the Mk 44/46 and Mk 37 wire-guided types can be accommodated. The Mk 32 torpedo tubes are built into the port and starboard sides of the after superstructure and are oriented to a 45-degree angle outboard of the centerline. The two Mk 25 tubes are built into the stern, facing aft. The Meroka 20-mm AA gun system to be installed on the stern. Fifteen Harpoon missiles were ordered for these ships in 1982. The TRITAN-1 combat data system is being installed during modernizations; F 75 completed 1973, F 72 in works 1985 at el Ferrol.

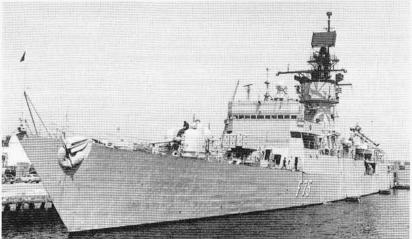


Asturias (F 74) - prior to refit

G. Arra, 1984

GUIDED-MISSILE FRIGATES (continued)





Estremadura (F 75) - with 8 Harpoon amidships

G. Arra, 1983

CORVETTES

• 4 Atrevida class

| | Bldr | Laid down | L | In serv. |
|-----------------------|------------------|-----------|---------|----------|
| PA 61 ATREVIDA | Bazán, Cartegena | 26-6-50 | 2-12-52 | 25-4-53 |
| PA 62 PRINCESA | Bazán, Cartegena | 18-3-53 | 31-3-55 | 2-10-59 |
| PA 64 NAUTILUS | Bazán, Cádiz | 27-7-53 | 10-9-56 | 10-12-59 |
| PA 65 VILLA DE BILBAO | Bazán, Cádiz | 18-3-53 | 19-2-58 | 2-9-60 |



Nautilus (PA 64)

L. & L. Van Ginderen, 10-84

D: 977 tons (1,136 fl) S: 16-17 kts Dim: 75.5 (68.0 pp) \times 10.2 \times 2.64 (4.08 max.) A: 1/76.2-mm U.S. Mk 26 DP — 3/40-mm AA (I \times 3)

Electron Equipt: Radar: 1/SPS-5B, 1/Decca . . .

M: 2 Sulzer diesels; 2 props; 3,000 hp Fuel: 100 tons Range: 8,000/10 Man: 9 officers, 123 men

REMARKS: Tandem machinery arrangement. Electronic equipment and weapons modernized with U.S. aid. Can carry twenty mines. Diana (F 63) stricken in 1972. F 61 and F 65 were to be stricken in 1979, but all have been refitted and are now employed in patrolling between Gibraltar and the Canaries. ASW ordnance and sonar removed 1980 when redesignated PA, Patrullero de Altura. Have a single lead-computing director for the 40-mm AA; 76.2-mm mount has a rangefinder only. Planned for disposal 1986-91.

PATROL BOATS

Bldr: P 01: Lürssen, Vegesack; others: Bazán, La Carraca, • 6 Lazaga class Cadiz

| | L | In serv. | | L | In serv. |
|---------------|---------|----------|----------------|----------|----------|
| PC 01 LAZAGA | 30-9-74 | 14-6-75 | PC 04 VILLAMIL | 15-5-75 | 26-4-77 |
| PC 02 ALSEDO | 8-1-75 | 28-2-77 | PC 05 Bonifaz | 15-5-75 | 11-7-77 |
| PC 03 Cadarso | 8-1-75 | 10-7-76 | PC 06 Recalde | 16-10-75 | 15-12-77 |



Villamil (PC 04)

L. & L. Van Ginderen, 1-85

D: 275 tons (397 fl) S: 29.7 kts Dim: 57.4 (54.4 pp) \times 7.60 \times 2.70 A: 1/76-mm OTO Melara DP - 1/40-mm Breda-Bofors AA - 2/20-mm AA (I \times 2) Electron Equipt: Radar: 1/Raytheon 1620/6, 1/H.S.A. M 22 M: 2 MTU MA-16V956 TB91 diesels; 2 props; 7,780 hp Electric: 405 kVA Fuel: 112 tons Range: 2,260/27; 4,200/17 Man: 4 officers, 35 men

Remarks: P 01 and P 03 were commissioned with a U.S. Mk 22, 76-mm instead of an OTO Melara 76-mm. Space reserved for addition of six 324-mm Mk 32 ASW torpedo tubes and a small, high-frequency sonar. Carry 300 rounds of 76-mm, 1,472 rounds of 40-mm, and 3,000 rounds of 20-mm, PC = Patrulleros Cañaneros: redesignated 1980. PC 03 conducted Meroka sea trials in 1984, with the 12-barreled 20-mm gun in place of the 76-mm mount.

Bldrs: P 11 Lürssen; others: Bazán, La Carraca, Cádiz ♦ 6 Barcelo class

| | L | In serv. | | L | In serv. |
|----------------------|----------|----------|---------------------|---------|----------|
| PC 11 BARCELO | 6-10-75 | 26-3-75 | PC 14 Ordonez | 10-9-76 | 7-6-77 |
| PC 12 LAYA | 16-12-75 | 23-12-76 | PC 15 Acevedo | 10-9-76 | 14-7-77 |
| PC 13 JAVIER QUIROGA | 16-12-75 | 1-4-77 | PC 16 CANDIDO PEREZ | 3-3-77 | 25-11-77 |



Javier Quiroga (PC 13)

G. Arra, 1981

D: 110 tons (134 fl) S: 36.5 kts Dim: 36.2 (43.2 pp) × 5.8 × 1.75 (2.15 props) A: 1/40-mm Bofors AA - 1/20-mm AA - 2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/Raytheon 1620/6

M: 2 MTU 16V538 TB90 diesels; 2 props; 7,320 hp (6,120 sust.)

Electric: 220 kVA Fuel: 18 tons Range: 600/33.5; 1,200/16

Man: 3 officers, 16 men

Remarks: Lürssen FPB 36 design. Carry 750 rounds 40-mm, 2,500 rounds 20-mm ammunition.

FISHERIES PATROL BOATS

Note: The following units, designated PVZ - Patrulleros de Vigilancia de Zona in 9-80, are operated by the Navy in behalf of the Ministry of Commerce for 200-nautical-mile economic zone patrol.

Bldr: Bazán, San Fernando, Cádiz ◆ 10 Anaga class

| | L | In serv. | | L | In serv. |
|-----------------|----------|----------|-------------------|----------|----------|
| PVZ 21 ANAGA | 14-2-80 | 30-1-81 | PVZ 26 Medas | 15-12-80 | 16-10-81 |
| PVZ 22 TAGOMAGO | 14-2-80 | 30-1-81 | PVZ 27 Izaro | 15-12-80 | 9-12-81 |
| PVZ 23 MAROLA | | 4-6-81 | PVZ 28 TABARACA | 15-12-80 | 30-12-81 |
| PVZ 24 Mouro | | 14-7-81 | PVZ 29 DEVA | 24-11-81 | 3-6-82 |
| PVZ 25 GROSA | 15-12-80 | 14-7-81 | PVZ 210 BERGANTIN | 24-11-81 | 30-7-82 |

D: 296 tons (350 fl) **S:** 20 kts **Dim:** 44.4 (40.0 pp) \times 6.6 \times 2.6 A: 1/76.12-mm U.S. Mk 22 DP -1/20-mm AA -2/12.7-mm mg (I \times 2) Electron Equipt: Radar: 1/Decca 1226 navigational Man: 25 tot. M: 1 Bazán/MTU 16V956 diesel; 1 prop; 4,800 hp Range: 4,000/15

Remarks: Ordered 22-7-78. PVZ 21 laid down 4-79.

FISHERIES PATROL BOATS (continued)



Deva (PVZ 29)

L. & L. Van Ginderen, 1984

4 PVZ 31 class Bldr: Bazán, San Fernando, Cádiz

| | L | In serv. |
|------------------------------|---------|----------|
| PVZ 31 CONEJERA (ex-LVE 1) | 9-81 | 31-12-81 |
| PVZ 32 DRAGONERA (ex-LVE 2) | 9-81 | 31-12-81 |
| PVZ 33 ESPALMADOR (ex-LVE 3) | 11-1-82 | 10-5-82 |
| PVZ 34 ALCANADA (ex-LVE 4) | 10-2-82 | 10-5-82 |



Conejera (PVZ 31)

L. & L. Van Ginderen, 10-84

D: 85 tons (fl) S: 25 kts Dim: 32.15 (30.0 pp) × 5.30 × 1.42

A: 1/20-mm AA - 1/12.7-mm mg

M: 2 Bazán/M.A.N. V8V16/18TLS diesels; 2 props; 2,800 hp

Range: 1,200/15 Man: 12 tot.

Remarks: Ordered 1978; first two laid down 20-12-79. Aluminum construction. A planned further six were not built.

Note: The five Carabo-class patrol boats (PVZ 12-16) and the single-unit Aguila (PVZ . . .) have been returned to customs service duties.

3 U.S. Adjutant-class former minesweepers

| | Bldr | L | In serv. |
|-----------------------|---------------------|----------|----------|
| PVZ 51 NALON | South Coast Co., | 22-11-52 | 16-2-54 |
| ex-M 21, ex-MSC 139) | Newport Beach, Cal. | | |
| PVZ 52 ULLA | Adams Yacht, | 28-1-56 | 24-7-58 |
| (ex-M 24, ex-MSC 265) | Quincy, Mass. | | |
| PVZ 54 Turia | Hiltebrand DD, | 14-7-54 | 1-6-55 |
| (ex-M 27 ex-MSC 130) | Kingston NV | | |

Remarks: Redesignated 9-80; all portable minesweeping gear removed. Data as for sisters retained as minesweepers. Two others redesignated PVZ have been returned to mine-warfare duties: Miño (PVZ 53/M 25) and Sil (PVZ 55/M 29).

• 1 former trawler Bldr: Juliana, Gijón (In serv. 1948)

PVZ 11 Salvora (ex-W 32, ex-Virgen de la Almudena, ex-Mendi Eder)

D: 274 tons (fl) S: 11 kts Dim: 32.58 × 6.22 × 3.77 A: 1/20-mm AA M: 1 Sulzer diesel; 1 prop; 400 hp

Fuel: 25 tons Man: 31 tot.

Remarks: Purchased 25-9-54. Redesignated PVZ 11 in 9-80.

2 former fishing boats

PVZ 71 NECORA PVZ 72 Percebes

D: . . . S: . . . Dim: . . . × . . . × . . .

A: ... M: ... Man: ...

Remarks: Acquired 1984. Based at Las Palmas, Canary Islands. No data available.

PATROL CRAFT

♦ 20 PVC 11 class Bldr: Aresa, Arenys del Mar, Barcelona (In serv. 1978-80) PVC 11 through PVC 19, PVC 110 through 120

D: 16.9 tons (21.7 fl) S: 26 kts Dim: 15.90 (13.7 pp) × 4.36 × 1.33

A: 1/12.7-mm mg Electron Equipt: Radar: 1/Decca 110

M: 2 Baudouin DNP-8 MIR diesels; 2 props; 768 hp Electric: 12 kVA

Fuel: 2.2 tons Range: 430/18 Man: 2 officers, 4-5 men

Remarks: Formerly LVC 1-LVC 20. Glass-reinforced plastic construction. PVC = Patrullero Vigilancia Costera.



PVC 14

P. Voss, 5-82

1 former customs patrol craft

Bldr: . . . (In serv. . . .)

PVC 41 (ex-Roquero)

D: 34 tons (fl) S: 14 kts Dim: 14.5 × 3.5 × . . .

A: . . . M: 2 G.M. diesels; 2 props; 292 hp Man: 9 tot.

Remarks: Transferred 1983. Wooden construction.

• 1 small patrol craft Bldr: Aresa del Mar, Barcelona

PVC 31 (ex-V 34) (L: 2-1-75)

D: 14 tons (16.4 fl) S: 24 kts Dim: 15.7 × 3.9 × 0.7

A: 1/12.7-mm mg Electron Equipt: Radar: 1/Decca 110 nav. M: 2 Cummins 8TV-370-M diesels; 2 props; 740 hp

Range: 500/20 Man: 7

Remarks: Was prototype for PVI 11 design; wooden construction.

 1 glass-reinforced plastic patrol craft Bldr: Viudes, Barcelona

PVC 21 (ex-V 33) (L: 24-3-77)

D: 20.3 tons (25 ft) S: 27 kts Dim: 16.06 × 4.30 × 0.97 A: 1/12.7-mm mg Electron Equipt: Radar: 1/Decca 110

M: 2 M.A.N. D-2542-MTE diesels; 2 props; 1,100 hp Range: 700/18 Man: 9 tot.

♦ 30 PVI 11 class Bldr: Rodman, Vigo (In serv. 1978-80)

PVI 11 through PVI 19, PVI 110 through PVI 130



PVI 114

L. & L. Van Ginderen, 12-84

D: 3 tons (4.2 fl) S: 18 kts Dim: 9.0 × 3.1 × 0.8

Range: 120/18 Man: 6 tot.

A: 1/7.62-mm mg M: 2 Volvo inboard/outboard diesels; 2 props; 240 hp

REMARKS: Formerly LVI 1-20, redesignated 9-80. PVI = Patrullero de Vigilancia Interior.

 4 PVI 21 class Bldr: Bazán, La Carraca, Cádiz (In serv. 1963-64)

PVI 21 through PVI 25



PVI 24

PATROL CRAFT (continued)

D: 17.2 tons (25 fl) S: 13 kts Dim: 14.04 × 4.57 × 1.0

A: 2/7.62-mm mg (II × 1)

M: 2 Gray Marine 64HN9 diesels; 2 props; 450 hp Man: 8 tot.

Remarks: Copy of U.S. "45-foot picket boat." Formerly LPI 1-5. No radar.

♦ 3 U.S. Coast Guard 83-foot craft Bldr: Bazán, Cádiz

PAS 11 (In serv. 24-3-65) PAS 12 (In serv. 21-4-65) PAS 13 (In serv. 13-9-65)



PAS 11-with old number

1969

D: 49 tons (63 fl) S: 15 kts Dim: 25.4 (23.8 pp) × 4.9 × 2.0

A: 1/20-mm AA - 2/7.62-mm mg - 2 Mk Mousetrap ASW RL (IV × 2)

Electron Equipt: Radar: 1/Decca . . . - Sonar: QCU

M: 2 diesels; 2 props; 800 hp Man: 15 tot.

Remarks: Wooden hull. Based on U.S.C.G. WPB design. PAS = Patrullero de Antisubmarino.

♦ 1 river patrol boat Bldr: Bazán, La Carraca, Cádiz (In serv. 11-1-63) PVI 01 CABO FRADERA (ex-V 22)

D: 28 tons S: 10 kts Dim: $17.80 \times 4.20 \times 0.82$ A: 2/mg M: Diesel; 280 hp Remarks: For use on the Miño River, as are the two following craft.

◆ 1 small river patrol craft Bldr: Cartagena SY (L: 5-5-69) PVI 31 (ex-V5)

D: 3.1 tons (5 ft) S: 7.5 kts Dim: 8.3 × 2.7 × 0.8 M: . . . diesel; . . . props; . . . hp Man: 7 tot.

• 1 small river patrol craft Bldr: Luarca SY

PVI 32 (ex-V6) (In serv. 10-8-52)

D: 4.5 tons S: 7 kts Dim: 8.3 × 3.0 × 1.25 M: . . . Man: 4 tot.

MINE WARFARE SHIPS

♦ 4 ex-U.S. Aggressive-class minesweepers

| | Bldr | L | In serv. |
|---|---|----------|----------|
| M 41 GUADALETE (ex-PVZ 41, ex-M 41, ex- Dynamic, MSO 432) | Colbert Boatworks, Stockton, Cal. | 17-12-52 | 15-12-53 |
| M 42 Guadalmedina (ex-Pivot, MSO 463) | Wilmington Boatworks, Wilmington, Cal. | 9-1-54 | 12-7-54 |
| M 43 Guadalquivir (ex-Persistent, MSO 491) | Tacoma Boat, Tacoma, Wash. | 23-4-55 | 3-2-56 |
| M 44 GUADIANA (ex-Vigor, MSO 473) | Burgess Boat, Manitowoc, Wisc. | 24-6-53 | 8-11-54 |



Guadalquivir (M 43)

L. & L. Van Ginderen, 5-85

D: 665 tons (780 fl) S: 14 kts Dim: 52.75 × 10.70 × 3.88 (4.2 max.)
A: 2/20-mm AA (II × 1) — 2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/SPS-5C, 1/Decca TM 626

Sonar: SQQ-14

M: 4 Packard diesels; 2 CP props; 2,280 hp Range: 2,000/12; 3,000/10 Man: 6 officers, 65 men

REMARKS: Modernized 1969-70. Loaned 1-7-71, except M 44 on 4-4-72. All purchased in 8-74. Equipped for mechanical, magnetic, and acoustic sweeping. *Guadelete* (M 41, ex-MSO 432) redesignated PVZ 41 in 9-80, redesigned M 41 late 1981.

♦ 8 ex-U.S. Adjutant, MSC 268* and Redwing**-class minesweepers

| | Bldr | L | In serv. |
|--|-------------------------------------|---------|----------|
| M 21 Jucar (ex-M 23, ex-MSC 220) | Bellingham SY, Bellingham, Wash. | 24-1-55 | 22-6-56 |
| M 22 EBRO (ex-M 26, ex-MSC 269)* | Bellingham SY, Bellingham, Wash. | 8-11-57 | 19-12-58 |
| M 23 Duero (ex-M 28, ex-Spoonbill, MSC 202)** | Tampa Marine, Tampa, Fla. | 3-8-54 | 16-6-59 |
| M 24 Tajo (ex-M 30, ex-MSC 287)* | Tampa Marine, Tampa, Fla. | 1-5-56 | 9-7-59 |
| M 25 GENIL (ex-M 31, ex-MSC 279)* | Tacoma Boat, Tacoma, Wash. | 8-8-58 | 11-9-59 |
| M 26 ODIEL (ex-M 32, ex-MSC 288)* | Tampa Marine, Tampa, Fla. | 3-9-58 | 9-10-59 |
| M 27 Stl. (ex-PVZ 55, ex-M 29, ex-Redwing, MSC 200)** | Tampa Marine, Tampa, Fla. | 29-4-54 | 16-6-59 |
| M 28 Miño (ex-PVZ 53, ex-M 25, ex-MSC 266) | Adams Yacht, Quincy, Mass. | 14-4-56 | 25-10-56 |



Ebro (M 22)

L. & L. Van Ginderen, 3-85



Jucar (M 21)

Spanish Navy, 1984

D: 355 tons (384 fl) S: 12 kts Dim: 43.0 (41.5 pp) × 7.95 × 2.55 A: 2/20-mm AA (II × 1) M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp Electron Equipt: Radar: 1/Decca TM 626 or RM 914—Sonar: UQS-1D Fuel: 40 tons Range: 2,500/10 Man: 2 officers, 35 men

Remarks: Originally a group of twelve, transferred under MAP: two in 1954, one in 1955, three in 1956, one in 1958, two in 1959, and three in 1960. Llobregat (M 22, ex-MSC 143) was stricken on 4-7-79 after a fire. M 21 and M 23 have a mast well astern of the stack; the others have only a small davit beside the stack. MSC 268-class ships were 43.9 m overall by 8.51 max. beam and had 4 G.M. 6-71 diesels; 2 props; 900 hp. Five sisters were redesignated PVZ in 9-80 and had portable sweep gear removed; two were redesignated minesweepers in 1984: M 27 and M 28.

AMPHIBIOUS WARFARE SHIPS

♦ 2 ex-U.S. Paul Revere-class transports Bldr: New York SB Corp., Camden, N.J.

In serv. L 21 CASTILLA (ex-Paul Revere, LPA 248, ex-Diamond Mariner) 13-2-54 3-9-58 L 22 Aragón (ex-Francis Marion, LPA 249, ex-Prairie Mariner) 11-4-53 6-7-61



Castilla (L 21)

Spanish Navy, 1984

D: 10,704 light (16,838 fl) S: 22.5 kts

Dim: 171.80 (160.94 pp) × 23.24 × 7.32 A: 8/76.2-mm Mk 33 DP (II × 4)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-12 (L 22: SPS-40) EW: WLR-1, ULQ-6

M: 1 set G.E. GT; 1 prop; 22,000 hp Electric: 2,400 kw

Boilers: 2 Combustion-Eng. (L 22: Foster-Wheeler); 42.3 kg/cm², 467°C

Range: 10,000/22; 17,000/14 Man: 28 officers, 424 men + troops: 96 officers,

1,561 men

Remarks: Mariner-class C4-S-1A merchant ships converted to troop transports. LPA 248 by Todd Shipyard, San Diego, and LPA 249 by Bethlehem Steel, Baltimore. Can carry seven LCM(6) and sixteen LCVP. Four Mk 63 gunfire-control systems removed between 1977 and 1978, but intercept and jamming equipment retained. In recent years had served the Naval Reserve Force. Were sold to Spain: L 21 on 17-1-80, and L 22 on 11-7-80. TACAN now removed from L 21.

1 ex-U.S. Cabildo-class landing ship, dock

Bldr: Philadelphia Navy Yard

Laid down

L In serv.

L 31 Galicia (ex-San Marcos, LSD 25) 10-1-45 15-4-45 1-9-44



Galicia (L 31) - with old number

1978

D: 4,790 tons (9,375 fl) S: 15 kts Dim: 139.52 × 21.9 × 5.49 max.

A: 12/40-mm AA (IV \times 2., II \times 2)

Electron Equipt: Radar: 1/Decca TM 626, 1/SPS-10

M: 2 sets GT; 2 props; 7,000 hp Boilers: 2 two-drum, 17.6 kg/cm²

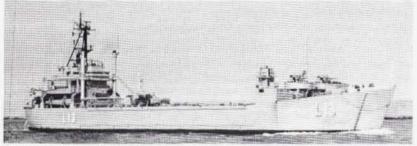
Range: 8,000/15 Man: 18 officers, 283 men + 137 troops

Remarks: Loaned 1-7-71 and sold outright 8-74. Well deck is 103.0 × 13.3 m. Platform for three helicopters. Can carry eighteen LCMs with one LCVP nested in each in the well. Cargo capacity: 1,347 tons. Four Mk 51, Mod. 2, lead-computing GFCS (no radar).

* 3 ex-U.S. Terrebone Parish-class tank landing ships

Bldrs: L 11 and L 13: Bath Iron Works; L 12: Christy Corp., Sturgeon Bay, Wisc.

| | L | In serv. |
|---|---------|----------|
| L 11 Velasco (ex-Terrebonne Parish, LST 1156) | 9-8-52 | 21-11-52 |
| L 12 Martin Alvarez (ex-Wexford County, LST 1168) | | 15-6-54 |
| L 13 CONDE DEL VENADITO (ex-Tom Green County, LST 1159) | 10-7-53 | 12-9-53 |



Conde del Venadito (L 13)

L. & L. Van Ginderen, 3-84

D: 2,590 tons (6,225 fl) S: 13 kts Dim: 117.35 × 16.7 × 3.7

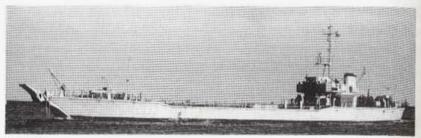
A: 6/76.2-mm Mk 33 AA (II × 3)

Electron Equipt: Radar: 1/Decca TM 626, 1/Decca 1229, 2/Mk 34 M: 4 G.M. 16-278A diesels; 2 props; 6,000 hp Electric: 600 kw Fuel: 1,060 tons Range: 6,000/9 Man: 115 tot.

REMARKS: L 11 and L 12 transferred on 29-10-71, and L 13 on 5-1-72. All purchased outright on 1-11-76. Accommodations for 395 troops. Cargo: 2,200 tons. Carry two LCVP to starboard and one LCPL to port. Two Mk 63 radar GFCS.

· 3 "Pelicano"-class utility landing craft Bldr: Bazán, La Carraca, Cádiz

L In serv. In serv. LCT 6 10-11-65 6-12-66 LCT 8 10-11-66 30-12-66 LCT 7 10-2-66 30-12-66



LCT 6

Spanish Navy, 1984

D: 279 tons (710 fl) S: 9.5 kts Dim: 59.00 (52.9 pp) × 11.90 × 1.86

A: 2/20-mm AA (I × 2) -2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/Decca 404

M: 2 Bazán-M.A.N. R6V16/18 TLS diesels; 2 props; 1,060 hp

Electric: 25 kw Range: 1,500/9.5 Man: 17 crew + 35 troops

REMARKS: In service in 12-66, Cargo: 300 tons. Formerly BDK 6-8, Design based on the French EDIC type.

• 2 utility landing craft Bldr: Bazán, el Ferrol (All in serv. 15-6-59)

LCT 4 (L: 30-4-58) LCT 5 (L: 31-5-58)

D: 302 tons (665 fl) S: 8.5 kts Dim: 56.6 × 11.57 × 1.7 A: 2/20-mm AA M: 2 MGO V8AS diesels; 2 props; 1,000 hp Range: 1,000/7 Man: 1 officer, 19 men

Remarks: Cargo: 300 tons. Formerly BDK 4-5. Similar to the class above. Sister LCT 3 stricken 3-7-84; LCT 4 and LCT 5 to strike 1986.

◆ 2 ex-U.S. LCU 1466-class utility landing craft Bldr: Kingston Dry Dock Const. Co., Kingston, N.Y. (L: 4-55)

LCU 11 (ex-LCU 1471) LCU 12 (ex-LCU 1491)

D: 180 tons (347 fl) S: 8 kts Dim: 35.05 × 10.36 × 1.6 A: 2/20-mm AA M: 3 Gray Marine 64YTL diesels; 3 props; 675 hp

Man: 6 crew + 8 troops

Remarks: Transferred in 6-72. Cargo: 160 tons. Formerly LCU 1, 2.

 1 experimental air-cushion vehicle landing craft Bldr: Chaconsa, Murcia

VCA 36 (In serv. 1985)

D: 22 tons (36 fl) S: 60 kts Dim: 25.17 × 11.04 × 9.50 (high)

A: None Electron Equipt: . .

M: 2 Avco-Lycoming gas turbines; 2 airscrew props, 5,000 hp

Range: 150/50 Electric: 30 kVA Man: 3 crew + 70 troops

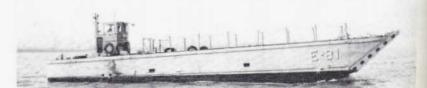
Remarks: Ordered 12-82 for the Marine Infantry, who also operate the 400-kg, 6-m, 40-kt trials hovercraft Furtivo. VCA 36 will be able to transport 14 tons of cargo or 3 Land Rover trucks, plus 70 troops. There are two centrifugal lift fans. The Navy also operates Chaconsa's VCA-3 hovercraft, a 4-ton test craft completed 1978. Cargo compartment: 18.65×2.60 m.

♦ 2 (+ . . .) new-construction landing craft Bldr: Bazán, San Fernando

LCM 601 (In serv. 28-12-84) LCM 602 (In serv. 1-2-85)

Remarks: No data available.

♦ 6 U.S. LCM(8)-class landing craft Bldr: Oxnard Boat, Cal. (In serv. 1975) LCM 81 through LCM 86



LCM 81 -with old number

AMPHIBIOUS WARFARE SHIPS (continued)

D: 115 tons (fl) S: 10 kts Dim: 22.7 × 6.55 × 1.83 (aft) M: 4 G.M. 6-71 diesels; 2 props; 600 hp Man: 5 tot.

REMARKS: Transferred 7-75 to 9-75. Formerly E 81-86.

♦ 6 ex-U.S. LCM(6)-class landing craft Bldr: Lukens Steel, Pa.

LCM 61 through LCM 66

D: 24 tons (57 fl) **S:** 10.2 kts **Dim:** $17.07 \times 4.37 \times 1.52$ **M:** 2 Gray Marine 64HN9 diesels; 2 props; 330 hp

REMARKS: Transferred on 23-12-74. Cargo: 30 tons

♦ 7 ex-U.S. LCM(3)-class landing craft

D: 20 tons (50 fl) **S:** 10.2 kts **Dim:** $15.24 \times 4.37 \times 1.17$ **M:** 2 Gray Marine 64HN9 diesels; 2 props; 330 hp

Remarks: Transferred in 12-57. Cargo: 25 tons.

♦ 16 ex-U.S. LCP(L)

D: 10.2 tons (fl) S: 19 kts Dim: $10.91 \times 3.42 \times 1.07$ (aft) M: 1 G.M. 8V71N diesel; 1 prop; 350 hp

REMARKS: Transferred in 10-58 and 1971

49 ex-U.S. LCVP

D: 13 tons (fl) S: 5 kts Dim: 11.0 × 3.2 × 1.1 (aft)
 M: 1 Gray Marine 64HN9 diesel; 1 prop; 225 hp

Note: Above totals reflect landing craft on hand before the transfer of LPA 248 and LPA 249, which retained their nine LCM(6) and eleven LCVP each. Most LCP(L) and LCVP are aboard larger ships.

AUXILIARY SHIPS

. . N. . .

♦ 0 (+1) SWATH prototype Bldr: Bazán, . . .

Laid down L In serv.

 \mathbf{D} : . . . \mathbf{S} : . . . \mathbf{Dim} : $50.0 \times 20.0 \times 5.0$ \mathbf{A} : . . . \mathbf{M} : . . . ; 2 props; . . . hp

Remarks: SWATH = Small Waterplane Twin Hull, a type of catamaran. Program announced for experimental prototype, financed half by Bazán and half by the Commission on Scientific Research of the Ministry of Education.

4 Castor-class survey ships Bldr: Bazán, La Carraca, Cádiz

| | L | In serv. | | L | In serv. |
|--------------|---------|----------|---------------|--------|----------|
| AH 21 CASTOR | 5-11-64 | 1-12-66 | AH 23 ANTARES | 5-3-73 | 21-11-74 |
| AH 22 POLLUX | 5-11-64 | 15-12-66 | AH 24 RIGEL | 5-3-73 | 21-11-74 |



Castor (AH 21)

L. & L. Van Ginderen, 7-84

D: 354.5 tons (383.4 ft) **S:** 11.5 kts **Dim:** 38.36 (33.8 pp) × 7.60 × 3.10 **Electron Equipt:** Radar: 1/Raytheon 1620

M: 1 Echevarria-B & W Alpha 408-26VO diesel; 1 prop; 800 hp

Fuel: 22.5 tons Range: 3,000/11.5 Man: 38 tot.

Remarks: Produced in pairs, the later units having full main-deck bulwarks. AH 21 and AH 22 have one Sulzer diesel, one prop, and 720 hp. Have Raydist navigation system, Omega receivers, three echo-sounders, and a Hewlett-Packard 2100A computer. Formerly A 21–24.

Note: There are plans to construct a new oceanographic/hydrographic research ship (see addenda).

♦ 2 Malaspina-class hydrographic ships

Bldr: Bazán, La Carraca, Cádiz

AH 31 Malaspina 14-8-73 21-2

In serv. 21-2-75

AH 32 Tofiño 22-12-73

L In serv. 2-12-73 23-4-75



Tofiño (AH 32)

G. Arra, 1982

D: 820 tons (1,090 fl) S: 15 kts Dim: 57.7 (51.4 pp) × 11.7 × 3.64 A: 2/20-mm AA Electron Equipt: Radar: 1/Raytheon 1620 M: 2 San Carlos-MWM TbRHS-345-6I diesels; 2 CP props; 2,700 hp Electric: 780 kVA Range: 3,140/14.5; 4,000/12 Man: 63 tot.

Remarks: Have Magnavox satellite navigation system, Omega, Raydist, three echosounders, side-scanning mapping sonar Mk 8, and a Hewlett-Packard 2100AC computer. Formerly A 31, 32.

 1 supply ship, ex-merchant refrigerated cargo ship M/V AB, Göteborg, Sweden (In serv. 5-53)

AT 01 Contramaestre Casado (ex-Thanasis K., ex-Fortuna Reefer, ex-Bonzo, ex-Bajamar, ex-Leeward Islands)



Contramaestro Casado (AT 01)

J.-C. Bellonne, 3-84

D: Approx. 5,300 tons (fl) **S:** 16 kts **Dim:** $104.20 (96.\overline{12} \text{ pp}) \times 14.36 \times 6.11$

A: None Electron Equipt: Radar: 1/Decca 626, 1/Decca TM 1226

M: 1 Eriksberg 7-cyl. heavy-oil diesel; 1 prop; 3,600 hp Range: 18,600/16 Fuel: 727 tons Electric: 660 kw Man: 72 tot.

Remarks: 2,272 grt/2,743 refrigerated cargo ship acquired to supply the Canary Islands, commissioned 15-12-82. Four cargo holds. Two 5-ton derricks. Helicopter platform at stern

♦ 0 (+1) planned new-construction oiler Bldr: Bazán, . . .

N. .

D: 13,000 tons (fl) **S:** 20 kts **Dim:** $145.0 \times 20.0 \times 8.0$

A: 2 or 4/Meroka CIWS (XII × 2 or 4) Electron Equipt: . . .

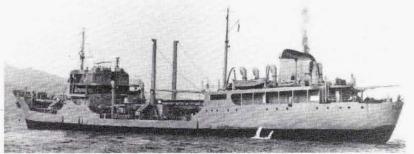
M: 1 or 2 Bazán SEMT-Pielstick high-speed diesel; . . . prop; . . . hp

Range: 4,000/20 Man: 15 officers, 85 men

Remarks: A Bazán (not naval) project to replace *Teide*. Would carry 7,000 tons cargo fuel, provisions, ammunition, spares, etc. to service a carrier and a 3- to 5-frigate task force. Not yet ordered.

1 oiler Bldr: Bazán, Cartagena

Laid down L In serv.
AP 01 Teide 11-11-54 20-6-55 20-10-56



Teide (AP 01)

AUXILIARY SHIPS (continued)

D: 2,750 tons (8,030 fl) S: 13.5 kts Dim: 117.5 × 14.85 × 7.73

A: None Electron Equipt: Radar: 1/Decca TM 626

M: 2 diesels; 1 prop; 3,360 hp Man: 98 tot.

Remarks: Fitted for underway refueling, one station each side; can transfer 300 tons/ hr. Formerly BP 11. Cargo: 5,350 m3. Normally on charter to state-owned CEPSA oil company for Spain-Canaries service.

• 1 netlayer

AC 01 CYCLOPE (ex-CR 1, ex-G 6)

Penhoët-Loire, Gran-Quecilly

L In serv. 29-9-54 29-7-55



Cyclope (AC 01)

D: 770 tons (831 ft) **S:** 12 kts **Dim:** 50.45 (44.5 pp) \times 10.37 \times 3.20 **A:** 1/40-mm AA - 4/20-mm AA (I \times 4)

Electron Equipt: Radar: 1/Decca TM 626

M: Diesel-electric propulsion, 2 SEMT-Pielstick PA 1-series diesels, 2/600

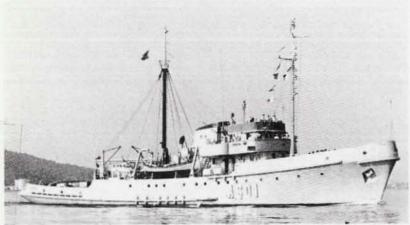
generators; 2 prop; 1,600 hp

Range: 5,200/12 Electric: 120 kw Man: 40 tot.

Remarks: Same characteristics as the French Scarabée. Transferred in 1955 under the U.S. Military Air Program. Named 1982. Refitted 1984; to strike 1987.

 1 submarine rescue, salvage ship, and diving tender Bldr: Bazán, La Carraca, Cádiz (In serv. 8-8-64)

AS 01 Poseidón (ex BS1, ex-RA 6)



Poseidón (AS 01)

G. Gyssels, 6-82

D: 951 tons (1,107 fl) S: 15 kts Dim: 55.90 (49.80 pp) × 10.00 × 4.80 A: 4/20-mm AA (II × 2) Electron Equipt: Radar: 1/Decca TM 626 M: 2 Sulzer diesels; 1 CP prop; 3,200 hp Range: 4,640/14 Man: 60 tot.

REMARKS: Near sister to AR 44 and AR 45. Can support a frogman group and has a 300-meter-depth rescue bell. Equipped for fire-fighting, towing, and has salvage pumps.

Bldr: Astilleros Atlantico, San- 2 former commercial oilfield support tugs tander (In serv. 1978)

AR 51 Manón (ex-Circos) AR 52 LAS PALMAS (ex-Somiedo)

D: . . . S: 14 kts Dim: 41.0 × 11.6 × 5.5

A: 2/12.7-mm mg (I \times 2) Electron Equipt: Radar: 2/Decca . . . M: 2 AESA-Sulzer 16 ASV 25/30 diesels; 2 props; 7,744 hp

Range: . . . Man: . . .

Remarks: 700 dwt. Purchased from Compañía Hispano Americana de Offshore SA and commissioned 30-7-81.



Las Palmas (AR 52)

P. Voss, 5-82

* 2 AR 44-class ocean tugs

Bldr: Bazán, La Carraca, Cádiz

AR 42 CADIZ (ex-AR 44, ex-R 4) AR 43 FERROL (ex-AR 45, ex-R 5)

In serv. 20-7-62 25-3-64

14-9-62 11-4-64



Ferrol (AR 43) - old number

P. Voss, 5-82

D: 951 tons (1,069 fl) S: 15 kts Dim: 55.9 (49.8 pp) × 10.0 × 4.0 A: 4/20-mm AA (II × 2) Electron Equipt: Radar: 1/Decca TM 626 M: 2 Sulzer diesels; 1 CP prop; 3,200 hp Range: 4,640/14 Man: 49 tot.

Remarks: Improved version of AR 41 design, similar to AS 01. Can carry and lay twenty-four mines.

1 royal yacht

Bldr L In serv. 21-7-49 A 11 Azor (ex-W 01) Bazán, el Ferrol 9-6-49



Azor (A 11)

J. Taibo, 1970

D: 442 tons (486 fl) S: 13.3 kts Dim: 46.65 × 7.70 × 3.81 Electron Equipt: Radar: 1/Decca TM 626 M: 2 diesels; 2 props; 1,200 hp Range: 4,000/13 Man: 47 tot.

1 sail-training ship

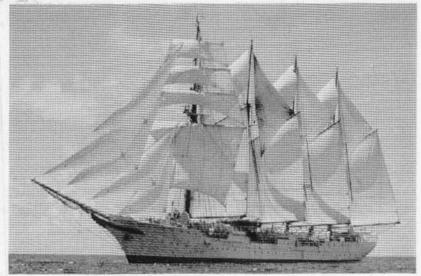
Bldr: Ast. Echevarrieta, Cádiz

Laid down 24-11-25

In serv. 5-3-27 17-8-28

A 01 JUAN SEBASTIAN DE ELCANO

AUXILIARY SHIPS (continued)



Juan Sebastian de Elcano (A 01)

Spanish Navy, 1984

D: 3,420 tons (3,754 fl) S: 10 kts Dim: $94.11 \times 13.6 \times 6.95$ Electron Equipt: Radar: 2/Decca TM 626 M: 1 Sulzer diesel; 1 prop; 1,500 hp Fuel: 230 tons Range: 13,000/8 Man: 224 men, 80 cadets

Remarks: Four-masted schooner, 2,467m² sail area. Carries two 37-mm saluting cannon. Also in use is the 10-m, two-masted *Galatea* (in serv. 1941), purchased 1970.

SERVICE CRAFT

• 5 navigational training tenders (In serv. 1982)

AI 01 GUARDIAMARINA BARRUTIA
AI 02 GUARDIAMARINA SALAS
AI 03 GUARDIAMARINA GODINEZ

AI 04 GUARDIAMARINA RULL
AI 05 GUARDIAMARINA CHEREGUINI

D: 90 tons (fl) S: 12.5 kts Dim: $21.89 \times 5.10 \times 1.52$ A: None Electron Equipt: Radar: 1/Halcon 948 M: 2 MTU diesels; 2 props; 800 hp Range: 1,000/. . . Man: . . . crew + 1 intructor and 12–21 cadets

Remarks: AI 01 in service 14-9-82; AI 04, 05 delivered 6-84. Tenders to the Naval School. Have Magnavox NAVSAT receiver, Decca 21 Navigator. Formerly numbered YE 01-05.

1 sail-training schooner (In serv. 1-4-81)

A 21 AROSA

1 yard oiler Bldr: Bazán, San Fernando (In serv. 1980)

YPF 21 (ex-PP 6) (In serv. 1980)

D: 523 grt S: 10.8 kts Dim: 34.0 × 7.0 × 3.0 M: 1 diesel; 1 prop; 600 hp Cargo: 300 tons

♦ 1 yard oiler Bldr: Bazán, San Fernando (In serv. 1980)

YPF 31 (ex-PP 23)

D: 830 grt S: 10.7 kts Dim: 42.8 × 8.4 × 3.1 M: 1 diesel; 1 prop; 600 hp Cargo: . . . tons

♦ 3 YPF 3-class yard oilers Bldr: Bazán, Cartagena (In serv. 1956-60)

YPF 51 (ex-YPF 3, ex-PP 3) YPF 52 (ex-YPF 4, ex-PP 4) YPF 53 (ex-YPF 53, ex-PP 5)

YPG 23 (In serv. 1965)

D: 510 grt **S:** 10 kts **Dim:** 37.0 × 6.8 × 3.0 **M:** 1 diesel; 1 prop; . . . hp

♦ 1 diesel-fuel lighter Bldr: ¬azán, Cartegena (In serv. 1981) YPG 41

D: 214 grt S: 10.7 kts Dim: 1...) × 5.5 × 2.2 M: 1/M.A.N. diesel; 1 prop; 400 hp Cargo: 100 tons

♦ 1 diesel-fuel lighter Bldr: Bazán, Cádiz (In serv. 1980) YPG 51

D: 520 grt S: . . . Dim: 34.0 × 7.0 × 2.9 M: 1 diesel; 1 prop; . . . hp Cargo: . . .

♦ 3 YPG 21-class diesel-fuel lighters Bldr: Bazán, Cádiz

YPG 21 (In serv. 1963) YPG 22 (In serv. 1965)

D: 337 grt
 S: 10.7 kts
 Dim: 34.3 × 6.2 × 2.3
 M: 1 diesel; 1 prop; 220 hp
 Cargo: 100 tons

♦ 2 YPG 01 class Bldr: Bazán, el Ferrol

YPT 11 (ex-YPG 01) (In serv. 1956) YPG 13 (ex-YPG 03) (In serv. 1959)

D: 200 grt S: 10 kts Dim: 34.0 × 6.0 × 2.7 M: 1 diesel; 1 prop; . . . hp Cargo: 193 tons

Remarks: Formerly numbered in the PB series. Sister YPG 02 stricken 1982.

♦ 1 large water tanker Bldr: Bazán, San Fernando (In serv. 16-10-81)

AA 41 CONESTABLE ZARAGOZA (ex-AA 32, ex-A 32)

D: 895 tons (fl) **S:** 10.8 kts **Dim:** 48.8 (42.85 pp) \times 8.40 \times 3.35 **M:** 1 diesel; 1 prop; 700 hp **Cargo:** 600 tons

♦ 1 large water tanker Bldr: Bazán, San Fernando (In serv. 1981)

AA 31 Marinero Jarana (ex-A 31)

D: 535 tons (fl) **S:** 10.8 kts **Dim:** 34.0 × 7.0 × 3.03 **M:** 1 diesel; 1 prop; 600 hp **Cargo:** 300 tons

♦ 3 A-7-class large water tankers Bldr: Bazán, La Carraca (all in serv. 6-62)

AA 21 Maquinista Maciás (ex-A 9; L: 25-10-58) AA 22 Torpedista Hernandez (ex-A 10; L: 10-10-58) AA 23 Fogonera Bañobre (ex-A 11; L: 5-3-62)



Maquinista Macias (AA 21)

L. & L. Van Ginderen, 7-84

D: 610 tons (fl) (ex-A-7, A-8: 706 fl) S: 9 kts Dim: 44.8 × 7.6 × 3.0 M: 1 diesel; 1 prop; 700 hp Range: 1,600/9 Man: 16 tot.

Remarks: Cargo: 300 tons. Named 1982.

1 large water tanker Bldr: Bazán, La Carraca (In serv. 1-4-51)

AA 06 CONTREMAESTRE CASTELLO (ex-A 6)

D: 1,860 tons (fl) S: 8 kts Dim: 64.05 × 9.60 × 4.80 M: Diesel

Note: Water tankers AA 17 and AA 02 stricken 14-7-82 and 2-8-82, respectively.

♦ 3 small water tankers Bldr: Bazán, Cádiz (In serv. 1965)

YA 01 (ex-AB 1) YA 02 (ex-AB 2) YA 03 (ex-AB 3)

D: 337 grt S: 10.7 kts Dim: 34.3 × 6.2 × 2.5 M: 1 diesel; 1 prop; 220 hp Cargo: 106 tons

◆ 3 gate craft (In serv. 1959-60)

YPB 01 (ex-PBP 1) YPB 02 (ex-PBP 2) YPB 03 (ex-PBP 3)

D: 140 tons (fl) Dim: 22.3 × 8.7 × 0.8 M: Non-self-propelled

4 netlaying barges (In serv. 1959-60)

YDS 01-02, YDS 04-05 (ex-PR 1,2,4,5)

D: 140 tons Dim: 22.3 × 8.7 × 0.8 M: Non-self-propelled Remarks: Sister YDS 03 stricken 1984.

◆ 4 harbor-defense support tugs (In serv. 1959-60)

YDS 11 YDS 12 YDS 21 YDS 22

D: . . . S: . . . Dim: 28.0 × 8.5 × 0.7

M: 1 diesel; 1 prop; . . . hp

Remarks: Handle the YPB-series gate craft and YDS-series netlaying barges. Sisters YDS 13, 14 stricken 1984. SPAIN (continued)

SERVICE CRAFT (continued)

♦ 2 torpedo-recovery craft/harbor minelayers (In serv. 1961-63)

YTM 11 YTM 16

D: 60 to 190 tons (fl) S: . . . Dim: . . .

Note: Submarine-support torpedo retrievers YTM 03, 04 stricken 1984.

♦ 7 diving tenders

YBZ 01 YBZ 03 YBZ 11 Nereida (BXL 10) YBZ 21 Proserpina YBZ 31 YBZ 32 YBZ 61

Remarks: All of 50 tons, self-propelled except YBZ 31, 32. YBZ 21 is a frogman support craft; D: 103.5 tons (In serv. 13-4-81). YBZ 61 in serv. 9-9-82.

• 6 floating cranes

YGR 11 Samsón (100 tons capacity) YGR 21, 22, 23 (30 tons capacity) YGR 31, 33 (15 tons capacity)

◆ 1 floating dry dock: YDFN 01 (ex-YDF 01)

♦ 2 coastal tugs Bldr: Bazán, el Ferrol

YRR 21 (ex-YRR 71) (In serv. 10-4-81) YRR 22 (ex-YRR 72) (In serv. 1-6-81)

D: 422 tons (fl) **S:** 12.4 kts **Dim:** $28.0 \times 8.0 \times 3.8$ **M:** 1 diesel; 1 prop; 1,500 hp

• 3 YRR-53-class coastal tugs Bldr: Bazán, Cartagena (In serv. 1967)

YRR 14 (ex-YRR 53, ex-RR 53) YRR 16 (ex-YRR 56, ex-RR 56)

D: 227 tons (320 fl) S: 12 kts Dim: 27.8 × 7.0 × 2.6 M: 1 diesel; 1 prop; 1,400 hp Man: 13 tot.

3 YRR-50-class coastal tugs
 Bldr: Bazán, Cartagena (In serv. 1963)

YRR 11 (ex-YRR 31, ex-RR 50) YRR 13 (ex-YRR 33, ex-RR 52)

D: 205 tons (300 fl) S: 10 kts Dim: 27.8 × 7.0 × 2.5 M: 1 diesel; 1 prop; 800 hp Man: 13 tot.

♦ 2 large harbor tugs Bldr: Bazán, Cartagena (In serv. 1981)

YRP 11 YRP 12

D: 229 tons (fl) S: 11 kts Dim: 28.0 × 7.5 × 3.4 M: 1 diesel; 1 prop; 950 hp

◆ 1 medium harbor tug (In serv. 27-12-61)

YRP 41 (ex-RP 40)

D: 150 tons (fl) **S:** 9 kts **Dim:** $21.3 \times 5.9 \times ...$ **M:** 1 diesel; 1 prop; 600 hp REMARKS: In service in 12-61. Former U.S. Army tug.

◆ 11 YRP 01-class small harbor tugs (In serv. 1965-67)

YRP 01-YRP 09 YRP 011-YRP 012

D: 65 tons (fl) S: . . . Dim: 18.5 × 4.7 × . . . M: 1 diesel; 1 prop; 200 hp REMARKS: Sister YRP 010 stricken 1984.

◆ 1 submarine-support push tug (In serv. 3-11-82)

YRS 01

◆ 1 suction dredge (In serv. 2-12-81)

YDR 11

◆ 3 miscellaneous launch-type small tugs: YRP 21 YRP 22 YRP 31

• 6 personnel launch/yachts

QF 11 (ex-LVC 79, ex-Cynosure) — ex-patrol craft, ex-yacht QF 01 through QF 05 — In serv. 1980-81

♦ 1 pontoon barge

YCFN 01

 37 miscellaneous barges, fuel floats, water barges, etc. — with hull number prefixes YGC, YGG, YGP, YGT

> CUSTOMS SERVICE (Servicio Especial de Vigilancia Fiscal)

PATROL CRAFT

♦ 1 wooden, 32-meter class Bldr: Chantiers Navals de l'Estérel, Cannes Aguilla (In serv. 1974)

D: 80 tons (fl) **S**: 30 kts **Dim**: 32.0 × 5.8 × 1.6

A: 1/20-mm AA Electron Equipt: Radar: 1/Decca 926

M: 2 MTU 820 diesels; 2,750 hp Man: 16 tot.



Aguila

L. & L. Van Ginderen, 1981

• 3 Aguilucho class Bldr: J. Roberto Rodriguez, Vigo (In serv. 1973-76)

Aguilucho Gavilan-II Gavilan-II

D: 45 tons (fl) **S:** 30 kts **Dim:** $26.1 \times 5.1 \times 1.3$

A: 1/20-mm AA M: 2 MTU 820Db diesels; 2 props; 2,750 hp

Range: 750/30 Man: 14 tot.

◆ 3 Albatros class Bldr: CMN, Cherbourg (In serv. 1968)

ALBATROS-II ALBATROS-III

D: 82 tons (fl) S: 28 kts Dim: 31.8 × 4.7 × 1.7

A: 1/20-mm AA M: 2 MTU 820Db diesels; 2 props; 2,750 hp Man: 15 tot.

5 22-meter patrol craft

Alca Gerifalte Halcon-II Milano Nebli-II

S: 17 kts (Alca: 10, Gerifalte: 12, Halcon-II: 32 kts)

◆ 1 16.5-meter patrol craft: Colimbo S: 20 kt

♦ 13 LVR-clsss patrol craft: LVR 1 to LVR 13

Dim:: 11.4 × . . . × . . . S:: 14 kts

SRI LANKA

Republic of Sri Lanka

Personnel (1985): 3,315 men, including 243 officers; plus 491 tot. Volunteer Naval Force, including 64 officers.

Merchant Marine (1984): 93 ships - 745,697 grt (tankers: 12 ships - 259,741 grt)

PATROL BOATS

• . . . class Bldr: China

REMARKS: Four (or five?) patrol boats were ordered 1-85 for delivery late 1985. Class not reported; may be additional units of the Shanghai-II class (see below).

♦ 2 (+3) large patrol boats Bldr: Colombo DY

| | Laid down | \mathbf{L} | In serv. |
|---------------------|-----------|--------------|----------|
| P 601 Jayesagara | 5-82 | 26-5-83 | 9-12-83 |
| P 602 Sagarawardene | 7-82 | 20-11-83 | 4-6-84 |
| P 603 N | 111 | | |
| P 604 N | 107 10 | | |
| P 605 N | | | |

D: 330 tons (fl) **S:** 15 kts **Dim:** 39.80 × 7.00 × 2.20

A: 2/25-mm AA (II × 1) M: 2 M.A.N. 8L 20/27 diesels; 2 props; 2,040 hp

Electric: 220 kw Man: 40 tot. Range: 3,000/11

Remarks: First two ordered 31-12-81; three more authorized 8-84. Intended as "Off-shore patrol boats."

• 6 Chinese Shanghai-II class

Balawitha Jagatha Pakshaka Ramakami Suraya Weeraya

D: 122.5 tons (135 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55

A: 4/37-mm AA (II \times 2) -4/25-mm AA (II \times 2) Electron Equipt: Radar: 1/Pot Head Man: 36 tot.

M: 2 M50-F4, 1,200-hp diesels; 2 12D6, 910-hp diesels; 4 props; 4,220 hp

Range: 750/16.5 Electric: 39 kw Endurance: 7 days

SRI LANKA (continued)

PATROL BOATS (continued)

Remarks: First five transferred in February 1972 and in 1975; Jagatha and Pakshaka transferred 1980, commissioning 30-11-80. Sister Daksaya stricken 1983.

Note: The Soviet Mol-class patrol boat Samudra Devi, acquired new only in 1975, was stricken 1983.

PATROL CRAFT

♦ 1 (+10 + . . .) Cougar Cat 900 patrol craft

Bldr: Cougar Marine, Netley,



Cougar Cat 900 prototype

Cougar Marine

D: 4.5 tons (fl) S: 42 kts Dim: 9.20 × 2.89 × 0.78 (0.46 at speed)

A: 1/20-mm AA or several mg

M: 2 Rolls-Royce Sabre diesels; 2 props; 424 hp

Remarks: First unit purchased 1984 for evaluation in operations from mother ships. Glass-reinforced plastic construction. Ten more ordered 1-85.

Bldr: Israeli Aircraft Ind. (In serv. 1985)

D: 47 tons (fl) S: 36 kts Dim: 21.62 × 5.49 × 0.94 (1.82 props)

A: 2/20-mm AA $(I \times 2) - 2/12.7$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/Decca 926

M: 2 MTU 12V331 TC81 diesels; 2 props; 2,720 hp Range: 700/32 Electric: 30 kw Man: 8-10 tot.

Remarks: Reported late 1984; most sources say two, some six. Aluminum construction.

Bldr: Colombo DY ♦ 5 P 445 class

| | L | In serv. | | L | In serv. |
|-------|---------|----------|-------|---------|----------|
| P 445 | | 20-9-82 | P 448 | 27-8-82 | 1982 |
| P 446 | | 17-9-82 | P 499 | 20-9-82 | 1982 |
| D 447 | 15 6 89 | 1989 | | | |

D: 40 tons (44 fl) **S:** 22 kts **Dim:** 20.0 (18.3 pp) \times 5.1 \times 1.3

A: 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 1/Decca . . .

M: 2 DDA-G.M. 12V71 TI diesels; 2 props; 1,300 hp

Fuel: 10 tons Range: 1,600/14 Man: 10 tot.

Remarks: Improved version of the Pradeepa class. Steel construction. Provision for mounting 1/20-mm AA. More may be built.

Bldr: Colombo DY, 1976-1981 • 6 Pradeepa class

P 431 PRADEEPA P 432 P 433 P 434 P 435 P 436

D: 40 tons (44 fl) **S:** 19 kts **Dim:** $19.5 \times 4.9 \times 1.1$

A: 2/20-mm AA (I × 2) M: 2 G.M. 8V71 TI diesels; 2 props; 800 hp

Range: 1,200/14 Man: 10 tot.

4 4 craft Bldr: Colombo DY, 1977-82

P 202 P 203 P 205 P 201

D: 15 tons (22 fl) S: 20 kts Dim: 13.73 × 3.63 × 0.90

A: 1/12.7-mm mg Range: 450/14 Man: 1 officer, 5 men

M: 2 G.M. 8V71 TI diesels; 2 props; 800 hp Fuel: 2.5 tons Electric: 1 kw

Remarks: Also employed for customs inspection.

 5 Belikawa class Bldr: Cheverton, Cowes, U.K.

P 423 Korawakka P 421 BELIKAWA P 425 TARAWA

P 422 DIYAKAWA P 424 SERUWA

D: 22 tons (fl) **S:** 23.6 kts **Dim:** $17.0 \times 4.5 \times 1.2$

A: 3/7.62-mm mg M: 2 G.M. 8V71 TI diesels; 2 props; 800 hp

Range: 790/18; 1,000/12.2 Man: 7 tot.

Remarks: In service between 4-77 and 10-77. Plastic construction. Originally intended for customs duties but used as patrol craft. The names may have been deleted.

COMMAND MOTHER SHIPS

 3 former "Deckship" container carriers Bldr: Chung Wah SB & Eng. Co., Ltd., Hong Kong (L: 1976-77; in serv. 9-8-84)

P 714 ABHEETHA (ex-Carinia) P 715 Edithara (ex-Francisca) P 716 Wickrama (ex-Delicia)

D: Approx. 2,700 tons S: 11 kts Dim: 76.66 (71.17 pp) × 17.07 × 3.81 (normal) A: . . . Electron Equipt: Radar: 1/. . . nav.

M: 2 Deutz SBA 12M528 diesels; 2 CP props; 3,000 hp Range: 5,000/11 Electric: 315 kw Fuel: 202 tons

REMARKS: Former 1,550 grt/4,318 dwt container carriers with no below-decks cargo capacity and a 30-ton traveling crane. Had a stern ramp to weather deck for vehicle cargo. Purchased 6-84 for use as mother ships for small patrol craft.

Bldr: DeWeal SY, Zaltbommel, the Nether- 3 former general-cargo ships lands (L: . . .)

A 24 Mahweli (ex- . . .) A 25 Lanka (ex . . .) A 26 Kanthi (ex . . .)

D: . . . S: . . . Dim: 99.5 × 15.7 × 6.8 Electron Equipt: Radar: . . M: 1 Werkspoor diesel; 1 prop; 3,600 hp

Range: 14,600/. . . Man: 37 tot.

REMARKS: Former M/V Kota Ria (purchased 6-10-84), Kota Rukun (purchased 17-9-84) and one other, of 3,276-3,314 grt/4,360 dwt. Intended to act as mother ships for small patrol craft. Typed "Surveillance Command Tenders," vice "Surveillance Command Ships" for trio above.

SERVICE CRAFT

 1 lighthouse and navigational aids tender Bldr: Hawker, U.K.

A 501 N. (ex-Frank Rees)

D: 57 tons (fl) S: . . . Dim: 20.0 × 5.5 × 2.0 M: 1 Kelvin diesel

Remarks: Acquired 1-4-76.

♦ 1 coastal tanker: MAHEWELI

1 fuel lighter: Madera Oya

Note: Training for the Ceylonese Navy is carried out aboard the commercial cargo ship Lanka Kanthi, operated by the Ceylon Shipping Corporation.

SUDAN

Democratic Republic of the Sudan

Personnel (1985): 600 men

MERCHANT MARINE (1984): 23 ships - 96,134 grt

AVIATION: Two CASA Aviocar C-212 were ordered 6-84 for Maritime Patrol duties.

Note: Due to operating conditions and the withdrawal of traditional sources of aid, the material condition of the units of the Sudanese fleet is rapidly declining. A number of patrol craft are no longer operable, and all auxiliaries have been discarded.

In 4-84 Bazán in Spain announced an order for two "Cormoran" guided-missile patrol boats, to be armed with 8 U.S. Harpoon missiles, and six 22-meter patrol craft. Considering the change of Sudanese government in 1985, it is possible that the order may not be carried through to completion.

PATROL BOATS

♦ 0 (+1) U.S. 105-ft Commercial Cruiser Louisiana (In serv. 1985)

Bldr: Swiftships, Morgan City,

N. . .

D: 118 tons (fl) S: 32 kts Dim: 31.73 × 7.10 × 2.16 (props)

A: . . . Electron Equipt: Radar: 1/. . . nav.

M: 2 diesels; 2 props; . . . hp Man: 21-24 tot.

REMARKS: Aluminum construction.

• 4 El Gihad class Bldr: Mosor, Yugoslavia (In serv. 1961-62)

PB 1 EL GIHAD PB 3 EL ISTIQUAL

PB 2 EL HORRIYA PB 4 EL SHAAB



El Horriya (PB 2)

L.V. Pujo

SUDAN (continued)

PATROL BOATS (continued)

D: 86 tons (100 fl) S: 20 kts Dim: 31.4 × 4.9 × 1.45

A: 2/40-mm AA (I × 2) - 2/12.7-mm mg

M: 2 Mercedes Benz diesels; 2 props; 1,820 hp Range: 1,200/12 Man: 17 tot.

♦ 3 ex-Iranian Bldr: Abeking & Rasmussen, West Germany (In serv. 1970)

SHEKAN (ex-Gohar) KADER (ex-Shahpar) KARARI (ex-Shakram)

D: 80 tons (fl) S: 28 kts Dim: 22.9 × 5.0 × 1.8

A: 3/20-mm AA (I×3) Electron Equipt: Radar: 1/Decca 202

M: 2 MTU diesels; 2 props; 2,200 hp Range: 1,220/21 Man: 3 officers, 16 men

Remarks: Built for the Iranian Navy, transferred to the Iranian Coast Guard in 1975 and to Sudan the same year.

PATROL CRAFT

♦ 4 ex-Iranian 40-foot class Bldr: Sewart, Morgan City, La. (In serv. 1970)

D: 10 tons (fl) S: 39 kts Dim: 12.2 × 3.4 × 1.1

A: 1/12.7-mm mg M: 2 G.M. 6-71 diesels; 2 props; 600 hp

Remarks: Transferred from the Iranian Coast Guard in 1975. Used for training. One being re-engined, 1984-85.

Note: Five auxiliaries, transferred 1969-70 from Yugoslavia, have been discarded: landing craft Sobat and Dinder, small oiler Fashoda, water tanker Baraka, and survey ship Tirhoga.

SURINAM

Republic of Surinam

Personnel (1985): 160 total.

Merchant Marine (1985): 25 ships - 15,222 grt (tankers: 1 ship - 208 grt)

Naval Aviation: The Air Force uses four Britten-Norman BN-42 B/T Maritime Defender aircraft for coastal patrol.

PATROL BOATS AND CRAFT

◆ 3 32-meter Bldr: De Vries, Aalsmeer, Netherlands

S 401 (In serv. 6-11-76) S 402 (In serv. 3-5-77) S 403 (In serv. 1-11-77)



S 403

1980

D: 127 tons (140 ft) **S**: 17.5 kts **Dim**: $32.0 \times 6.5 \times 1.7$

A: 2/40-mm AA $(I \times 2) - 2/7.62$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/Decca 110

M: 2 Paxman 12 YHCM diesels; 2 props; 2,110 hp Range: 1,200/13.5

Man: 15 tot.

• 3 22-meter Bldr: Schöttel, Warmond, the Netherlands

C 301 (In serv. 2-76) C 302 (In serv. 2-76) C 303 (In serv. 11-76)

D: 65 tons (70 fl) S: 13.5 kts Dim: 22.0 × 4.7 × . . .

A: 1/12.7-mm mg -2/7.62-mm mg (I \times 2)

Electron Equipt: Radar: 1/Decca 110

M: 2 Dorman 8JT diesels; 2 props; 560 hp Range: 650/13.5 Man: 8 tot.

3 12.6-meter river patrol craft (In serv. 1975)
 Bldr: Schöttel, Warmond, the Netherlands

RP 201 Bahadoer RP 202 Fajablow RP 203 Korangon

D: 15 tons (20 fl) S: 14 kts Dim: 12.6 × 3.8 × 1.1

A: 1/12.7-mm mg M: 1 Dorman 8JT diesel; 280 hp

Range: 350/10 Man: 4 tot.

 1 10-meter river patrol craft (In serv. 8-75) Bldr: Schöttel, Warmond, the Netherlands

D: 10 tons S: 14 kts Dim: 10.0 × . . . × . . . A: . . . M: 1 Dorman 8 JT diesel; 280 hp

SWEDEN

Kingdom of Sweden

Personnel (1985): 3,500 men of the regular navy, including officers, petty officers, enlisted men, and civilians with permanent status, plus 6,200 national service men available for immediate service and 3,500 reserves. Additionally, some 8,000 conscripts receive annual naval training.

 $\begin{array}{ll} {\bf Merchant\ Marine\ (1984):\ 679\ ships-3,} 520,\!352\ grt \\ {\bf (tankers:\ 109\ ships-1,} 615,\!670\ grt) \end{array}$

Naval Aviation: 350 men. 32 helicopters: 5 Alouette-II (HKP-2) for training, 10-Agusta Bell 206-A JetRanger (HKP-6), and 17 Vertol 107 (3 HKP-4B for minesweeping and 7 HKP-4C for rescue and ASW, with 6 depth charges or up to 4 Type 422 torpedoes, DUAV-4 dipping sonar). Four of the 17 HKP-4C were transferred from the Air Force in 1984, with three more to follow in 1985-86. A Cessna 404 Titan with a prototype side-looking radar (SLAR) was delivered 6-83, with two more SLAR-equipped aircraft to be acquired by 1987.



HKP-4 (Vertol 107)

Royal Swedish Navy



HKP-6 (Agusta Bell 206-A)

Royal Swedish Navy

WEAPONS AND SYSTEMS

Most of the electronic equipment in use in the Swedish Navy is of Dutch design (for example, LW-03 air-search radars, H.S.A. fire-control radars), locally manufactured or of wholly Swedish design and construction.

A. Missiles

◆ The U.S. Laser-Hellfire missile is to be procured as the RB-17 for coastal defense service between 1989-95; 25 battalions with RB-17 are to be formed to replace 32 battalions with French wire-guided SS-11 missiles.

WEAPONS AND SYSTEMS (continued)

 The Saab RB-08A, a surface-to-surface missile based on the CT-30 of the S.N.I.A.S., is in use in the coastal defense batteries.

Length: 5.7 m Wingspan: 3.6 m Diameter: 0.65 m Weight: 9,000 kg

Max range: 70 nautical miles

◆ The infrared homing Norwegian Penguin Mk 2 missile is in use on board the Huginclass patrol boats, where it is called the RB-12. It has a 120-kg warhead.

Weight: 340 kg Length: 3.0 m Speed: Mach 0.7 Diameter: 280 mm

Wingspan: 1.4 m Max. range: 30 km at an altitude of 60-100 m

 The Saab RBS-15 becomes operational in 1985. The missile has a solid rocket booster and a turbojet sustainer. A sea-skimmer, it has a terminal-homing guidance system. The RBS-15F version will be launched from Air Force Viggen jet fighters, and a vertical submerged-launched RBS-17 version may be developed for the Västergötland-class submarines.

Length: 4.350 m Diameter: 0.500 m Weight: 598 kg (770 kg with booster)

Speed: Mach 0.8

Wingspan: 0.85 m (folded) Range: 80-100 km at an altitude of 10-20 m

1.4 (extended)

◆ The RBS-70 shoulder-launched SAM entered development in 1983 as a weapon for surface combatants in a version known as the RBS-70 SLM. Range of the IR-homing missile is 5 km, to be extended to 6 km with the Mk II version in the late 1980s.

B. Guns

The Swedish Bofors firm furnishes the guns, the principal ones being:

♦ 57-mm single-barrel automatic SAK 57 Mk 1

Installed on the Hugin-class missile boats, the Spica and Spica-II torpedo boats Elevation: -10°/+75° Mount weight (without ammunition): 6 tons Train speed: 55°/sec Max. rate of fire: 200 rounds/min

Elevation speed: 20°/sec

♦ 57-mm single-barrel automatic SAK 57 Mk 2

Entered service aboard Stockholm in 1985. Trials with the weapon took place 1981-82 on the Hugin-class missile boat Mjölner. Also purchased by Canada.

Mount weight: 6 tons

Max. rate of fire: 220 rounds/min

Train speed: 55°/sec Elevation: -10°/+85°

Shell weight: AA: 5.8 kg (projectile: 2.4 kg)

Surface fire: 6.8 kg Muzzle velocity: 1,020 m/sec. Range: 14,000 m max. horizontal

Will carry 120 rounds ready service within the low, streamlined gunhouse, automatically loading clips of 20 rounds each.

40-mm single-barrel semi-automatic L70

World-standard weapon, by Bofors. Mk 2 proximity fuze now offered. A new mounting, the 3.7-ton "Trinity" with 1.025 m/sec muzzle velocity, a 4-km range, and a 330-rpm firing rate; fitted with an integral radar, the "Trinity" fires a 1.1-kg 3-P (Programmed Proximity Prefragmented) round.

C. Torpedoes-FFV Ordnance, Motala

The wire-guided Type 61 is used for anti-surface duties from surface ships and submarines. The weapon entered service in 1977, and is now delivered in the Type 613 version, with a wakeless hydrogen peroxide engine.

Weight: 1,765 kg Length: 7,025 mm Range: 30,000 m

Warhead: 240 kg Diameter: 533.4 mm

The Type 617 is a 6.98-m-long export version weighing 1,850 kg and having a

20,000-m range.

The Type 42 torpedo is wire-guided and has acoustic homing, for use by submarines, surface ships, and aircraft against submarines. It was developed from the similar Type 41, which is still in service. The current Type 422 entered Swedish service in 1983; a reduced-charge warhead is available for peacetime use against intruders. A Type 431, improved ASW torpedo is to enter service in 1987.

Data for the Type 422 include;

Length: 2,600 mm (2,440 mm without wire-guidance attachment)

Diameter: 400 mm Warhead: 50 kg

Weight: 298 kg Range: 20,000 m (10,000 at high speed)

D. ASW Weapons

The Malin small depth charge and Elma harassment device are being procured for helicopter and surface ship use. Elma is a rocket launcher firing 100-mm-dia. charges to ranges of 250-300 m in patterns of 9, 18, 27, or 36 grenades when installed in the normal 4-unit suit. Each grenade weights 4.2 kg and has a shaped-charge warhead. A shallowwater (10-m minimum) version is to enter service in 1986, followed by chaff and IR decoy rounds.

The Bofors 375-mm ASW rocket launcher, no longer in Swedish Navy service, is widely used in foreign navies in 2-, 4-, or 6-tubed versions. Two types of rockets are furnished: the Erika, with ranges from 600-1,600 m and the Nelli, with ranges from 1,600-3,600 m. The SR-375 twin-tubed launcher has a 24-round auto-loading magazine.

The Ericsson Sea Giraffe series C-band radars are offered for export in various models and provide for air and surface search via two separate channels. The digital, pulse-compression radar is offered at 15-60-kw power with differing antenna gains.

Seven sets of U.S. Klein sidescan high-frequency sonars were purchased in 1984 to assist in locating intruding submarines.

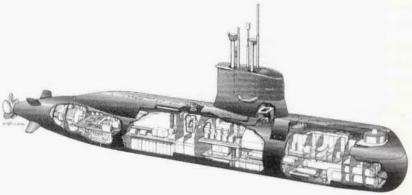
SUBMARINES

• 0 (+5) Type 90 Project

Remarks: The UB 90 is scheduled to replace the Sjöormen class, with the first to complete in 1995. No details made public yet, but will probably incorporate Sterlingcycle external-combustion engines in the generator sets.

♦ 0 (+4) Västergötland class (Type A-17) Bldrs: Kockums, Malmö, and Karlskrona

| | Laid down | L | In serv. |
|-------------------|-----------|------|----------|
| Vgd Västergötland | 10-1-83 | 1985 | 1987 |
| Hgd Hälsingland | 1-1-84 | 1986 | 1988 |
| SÖD SÖDERMANLAND | | 1986 | 1988 |
| ÖGD ÖSTERGÖTLAND | | 1987 | 1989 |



Västergötland - artist's rendering

Kockums, 1983

D: 990 tons surf./1,140 sub.) S: 12 kts surf./20 kts sub.

Dim: $48.50 \times 6.10 \times 6.10$ (surf.)

A: 4/533-mm TT (8 Type 61B torpedoes or mines) - 2/400-mm TT (4 Type 42B torpedoes) - all bow

Electron Equipt: Radar: 1/Terma. . . —Sonar: . . . —EW: . . . M: 2 Hedemora V12A/15-UG, 1,080-hp diesels; 2 Jeumont-Schneider 760-kw generators; 1 ASEA electric motor; 1/5-bladed prop; 1,800 shp

Man: 17 tot.

Remarks: Design by Kockums under 17-4-78 contract. Ships ordered 8-12-81, with Kockums building the mid-bodies and Karlskrona building the bows and sterns. May later be equipped with four vertical tubes for RBS-17 anti-ship missiles (a submergedlaunch version of the RBS-15) in the sail. The torpedo tubes are arranged with the row of four 533-mm tubes above the two short 400-mm tubes, with separate reload magazine compartments. Very low reserve buoyancy — 7%. Bow planes on sail, cruciform stern controls surfaces. Six spare berths for trainees. Tudor lead-acid batteries. Two main watertight compartments. Two periscopes. Will use Ericsson IPS-17 combat data/fire control system.

♦ 3 Näcken (Type A-14) class

| | Bldr | Laid down | L | In serv. |
|------------|----------------|-----------|---------|----------|
| Näk Näken | Kockums, Malmö | 11-72 | 17-4-78 | 25-4-80 |
| Naj Najad | Karlskrona | 9-73 | 6-12-78 | 5-12-80 |
| NEP NEPTUN | Kockums, Malmö | 3-74 | 13-8-79 | 26-6-81 |

D: 1,030 surf. (fl)/1,125 tons S: 20/20 kts Dim: 49.5 × 6.1 × 4.1

A: 6/533-mm TT (8 Type 61B torpedoes or mines) — 2/400-mm TT (4 Type 42B torpedoes)

M: Diesel-electric: 1 MTU 16V652, 1,800-hp diesel; 1 Jeumont-Schneider generator; 1 5-bladed prop; 1,500 hp

Electric: 150 kw (Scania diesel) Man: 5 officers, 14 men

REMARKS: Ordered at the end of 1972. The 168-cell Tudor electric battery installation is mounted on shock absorbers. Single Kollmorgen periscope. An Ericsson IDPS central data system furnishes, in addition to tactical information, data on the main engines; it uses 2 Censor 932 computers. Able to lay mines. Stern planes are x-configuration; bow planes on the sail. Näcken and Neptun were launched by cranes. Diving depth: 300 m



Näcken (Näk) - with snorkel intake raised

Royal Swedish Navy, 1979

SUBMARINES (continued)



Näcken (Näk) — abreast Sjohästen (Shä) outboard Alvsborg (M 02)

L. & L. Van Ginderen, 3-82

(500-m collapse). The 533-mm tubes use Type 61 torpedoes, the 400-mm, Type 42. Kockums is developing a "mine-girdle" removable minelaying magazine for this and other Swedish submarine classes.

• 5 Sjöormen (Type A-11B) class

| | Bldr | Laid down | L | In serv. |
|----------------|----------------|-----------|---------|----------|
| SOR SJÖORMEN | Kockums, Malmö | 1965 | 25-1-67 | 31-7-67 |
| SLE SJÖLEJONET | Kockums, Malmö | 1966 | 29-6-67 | 16-12-68 |
| SHU SJÖHUNDEN | Kockums, Malmö | 1966 | 21-3-68 | 25-6-69 |
| SBJ SJÖBJÖRNEN | Karlskrona | 1967 | 6-8-68 | 28-2-69 |
| Shā Sjöhästen | Karlskrona | 1966 | 9-1-68 | 15-9-59 |



Sjölejonet (Sle)

L. & L. Van Ginderen, 1981

D: 1,130/1,400 tons S: 15/20 kts Dim: 50.5 × 6.1 × 5.1

A: 4/533-mm TT (8 Type 61B torpedoes or mines) — 2/400-mm TT (4 Type 427 ASW torpedoes)

M: Diesel-electric: 4 Hedemora-Pielstick V12A2 diesel generator groups, 2,100 hp; 1 ASEA electric motor; 1 5-bladed prop; 1,500 hp

Endurance: 21 days Man: 7 officers, 11 men

Remarks: Maximum diving depth 150 meters. Four battery compartments. Stern planes are x-configuration; bow planes on the sail. One unit given turbocharged (vice supercharged) diesels, 1982. Modernized 1984-85 with Ericsson IBS-A17 combat data/fire control system.

• 4 Draken (A-11) class

| | Bldr | Laid down | L | In serv. |
|-----------------|----------------|-----------|---------|----------|
| DEL DELFINEN | Karlskrona | 1959 | 7-3-61 | 7-6-62 |
| NOR NORDKAPAREN | Kockums, Malmö | 1959 | 8-3-60 | 4-4-62 |
| SPR SPRINGAREN | Kockums, Malmö | 1960 | 21-8-61 | 7-11-62 |
| Vgn Vargen | Kockums, Malmö | 1958 | 20-5-60 | 15-11-61 |



Delfinen (Del) - with Alvsborg (M 02) beyond

L. & L. Van Ginderen, 3-82

D: 770/835 surf./1,110 tons sub. S: 17/20 kts Dim: 69.0 × 5.1 × 5.0

A: 4/533-mm TT fwd-12 full-sized torpedoes (see remarks)

M: Diesel-electric: 2 Hedemora-Pielstick 16V-12 PA diesels, 1,660 bhp; 2 electric motors; 1 prop; 1,500 hp

Man: 36 tot.

Remarks: Snorkel-equipped; 1 periscope. Sisters *Draken* and *Gripen* stricken 1-7-81; the survivors have been modernized. A-17 type will replace them in the late 1980s. Two or three Type 427 torpedoes can fit in each tube, via adapters, using swim-out launching.

♦ 1 2-man midget submarine Bldr: Yugoslavia (In serv. 1-85)

R 2

D: 1.4 tons S: 4.4 kts Dim: 4.9 × 1.4 × . . .

A: 24-kg total limpet mines

M: Electric motor; 6 hp Range: 18/4.4; 23/1.7

REMARKS: Aluminum and Plexiglas hull. Diving depth: 60 m max. Also purchased was a 2-man chariot, R 1, with a range of 8 n.m. at 2.5 kts; the device is 3.7 m long and weighs 145 kg without riders. Both craft are intended to assist in the search for submarine intruders and to act as training targets.

 1 URF-class salvage and rescue submersible (L; 8-78) Bldr: Kockums, Malmö

URF 1

D: 50 tons (surfaced) S: 3 kts Dim: 13.5 × 4.3 × 2.9

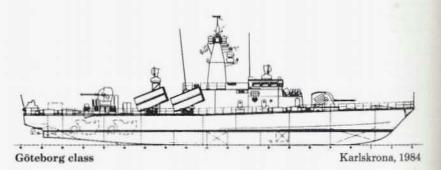
Remarks: Has a depth capability of 460 meters and can accommodate up to 25 persons rescued from a bottomed submarine. Based at the Naval Diving Center, Berga. Can be towed at up to 10 kts to the scene of an accident. Lock-out capability to support two divers to 300 meters. Pressure hull of HY 130 steel; collapse depth 900 meters. Two projected sisters not built.

Note: The Halland-class destroyer Smaland was stricken 1-7-84; her sister Halland has been in reserve since 1982 without refit and is unlikely to see further service.

GUIDED-MISSILE PATROL BOATS

♦ 0 (+4 + 2) Göteborg class (KKV-90 design) Bldr: . . .

| | Laid | 1 | lown | L | | In | 1 | 86 | rv |
|------------------|------|---|------|---|---|----|----|----|-----|
| K 21 Göteborg | | | | ٠ | | | è | | |
| K 22 Gävle | | | | | | | | * | |
| K 23 Kalmar | | × | | è | * | | × | | |
| K 24 SUNDSVALL | | , | | | | | | | * |
| K 25 Helsingborg | | | | | | | * | | |
| K 26 Härnösand | * | | * | | | | á: | * | (4) |
| | | | | | | | | | |



D: 355 tons (400 ft) S: 35 kts Dim: 57.0 (50.0 wt) × 8.0 (7.3 wt) × 1.93 A: 8/RBS-15 SSM (II × 4) -1/57-mm Bofors SAK57 Mk 2 DP -1/40-mm Bofors Trinity AA -8/400-mm ASW TT -4/Elma ASW RL (IX × 4) - mines

Electron Equipt: Radar: 1/. . . nav., 1/Sea Giraffe 50 HC or PEAB Karin, 2/9LV 200 f.c.

Sonar: Simrad SS 304 Spira, Thomson-CSF TSM 2640 Salmon VDS (dismountable)

EW: . . .

M: 3 diesels; 3 KaMeWa waterjets; . . . hp Range: . . . Electric: . . . Man: 31 tot.

Remarks: First four ordered 1-12-85; others to be requested later in 1980s; considered to be "corvettes." An expanded version of the *Stockholm* design, intended to replace the remaining Spica-I missile boats. The Phillips 9LV 400 gunfire control system will use two 9LV 200 Mk 2 radar/optronic directors. Will carry both Type 61 and Type 43-series torpedoes. The decision to construct these ships was placed in abeyance

◆ 2 Stockholm class (Spica III/YA-81 design) Bldr: Karlskronavarvet

| | Laid down | L | In serv. |
|----------------|-----------|---------|----------|
| К 11 Ѕтоскноьм | 1-8-82 | 24-8-84 | 1-3-85 |
| K 12 Malmö | 14-3-83 | 21-3-85 | 10-5-85 |

D: 290 tons (320 fl) S: 32 kts (20 kts on diesels) Dim: 50.0 (46.6 wl) × 7.5 (6.8 wl) × 1.9 (hull)

GUIDED-MISSILE PATROL BOATS (continued)

A: 6-8 RBS-15 SSM (II \times 4 or II \times 2, I \times 1) — 1/57-mm Bofors SAK 57 Mk 2 DP — 1/40-mm AA — 2/533-mm TT — 4 Elma ASW RL (IV \times 4) — mines Electron Equipt: Radar: 1/. . . nav., 1/Ericsson Sea Giraffe 50HC, 1/PEAB 9LV 200

Sonar: Simrad SS 304 Spira; Thomson-CSF TSM 2640 Salmon VDS (dismountable)

EW: Saab-Scania EWS-905 intercept; chaff RL

M: CODAG 1 Allison 570KF, 7,170-hp (6,000 sust.) gas turbine; 2 MTU 16V396 TB93 diesels (2,095 hp each); 3 CP props; 11,360 hp

Electric: 648 kw Range: . . . Man: . . .

REMARKS: Considered to be "corvettes." Armament suit interchangeable, the RBS-15 missiles being replaceable by 2 more torpedo tubes, ASW torpedo tubes, and/or mine rails. Have the Ericsson MARIL weapons-control system, with an SRA Censor 932E computer. The 57-mm mount, unlike export versions, can be manned for local control. The 9LV300 gunfire control system incorporates a 9LV200 radar director forward and a 9LV100 optronic director on the aft face of the main mast.



Stockholm (K 11)

Karlskrona, 1984

17 Hugin class Bldrs: Bergens Mekanske Verksted, Norway (P 154-158 subcontracted to Westermoen, Mandal, Norway)

| | L | In serv | | L | In serv. |
|---------------|---------|----------|------------------|----------|----------|
| P 150 Jägeren | | 8-6-72 | P 159 KAPAREN | 8-8-79 | 7-8-80 |
| P 151 Hugin | 3-6-77 | 3-7-78 | P 160 VÄKTAREN | 12-12-79 | 19-9-80 |
| P 152 Munin | 3-10-77 | 3-7-78 | P 161 SNAPPHANEN | 18-3-80 | 14-1-81 |
| P 153 Magne | 9-1-78 | 12-10-78 | P 162 Spejaren | 13-5-80 | 21-3-81 |
| P 154 Mode | 8-8-78 | 12-1-79 | P 163 Styrbjörn | 8-80 | 26-10-81 |
| P 155 VALE | 3-10-78 | 26-4-79 | P 164 STARKODDER | 1-81 | 24-8-81 |
| P 156 VIDAR | 6-3-79 | 10-8-79 | P 165 TORDÖN | 3-2-81 | 26-10-81 |
| P 157 MJÖLNER | 12-6-79 | 24-10-79 | P 166 TIRFING | 17-9-81 | 21-1-82 |
| P 158 Mysing | 18-9-79 | 14-2-80 | | | |



Kaparen (P 159) — with 2 Penguin Mk 2, mines, new EW gear L. & L. Van Ginderen, 11-83



Hugin (151) - no missiles, 6 mines

L. & L. Van Ginderen, 10-84

D: 120 tons (150 fl) S: 35 kts Dim: 36.53 (33.6 pp) × 5.20 × 1.60 A: 2-6 Penguin Mk 32 (I × 6) −1/57-mm Bofors SAK 57 Mk 1 DP −24 mines or 2/d.c. racks in lieu of missiles −4 Elma ASW RL (IX × 4) Electron Equipt: Radar: 1/Scanter 009, 1/PEAB 9LV200 Mk 2 system

Sonar: 1/Simrad SQ3D/SF EW: Saab-Scania EWS-905



Stockholm (K 11)

GUIDED-MISSILE PATROL BOATS (continued)

M: 2 MTU 20V672 TB90 diesels; 2 props; 7,200 hp Electric: 200 kVA Range: 550/35 Man: 3 officers, 19 men

Remarks: Carry 6 Norwegian Penguin Mk 2 (Swedish RB-12) SSM (I × 6), but normally mount only two. P 150 briefly carried 6 Penguin Mk 1. Prototype Jägaren, renumbered from P 151, had new engines; those in the others came from discarded Plejad-class torpedo boats. Carry 103-mm rocket flare launchers on either side of the 57-mm gunmount. The PEAB 9LV200 Mk 2 fire-control system employs separate search and tracking radars. P 157 carries the prototype SAK 57 Mk 2 57-mm DP gun, but mounted within the original high gunhouse. Saab-Scania EWS-905 "Doughnut" passive intercept EW systems are being added, with the toroidal radome mounted just below the search antenna for the 9LV200 system. Elma 100-mm ASW rocket launchers are being added to all.

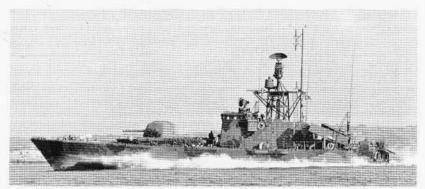
♦ 12 Spica-II class Bldr: Karlskronavarvet and Götaverken

| | L | In serv. | 4 | w L | In serv. |
|------------------|----------|----------|-----------------|----------|----------|
| R 131 Nörrkoping | 16-11-72 | 5-11-73 | R 137 UMEA | 13-1-75 | 15-5-75 |
| R 132 Nynäshamn | 24-4-73 | 8-9-73 | R 138 PITEA | 12-5-73 | 13-9-75 |
| R 133 Nortälje | 18-9-73 | 1-8-74 | R 139 LULEA | 19-8-75 | 28-11-75 |
| R 134 VARBERG | 2-2-74 | 13-6-74 | R 140 Halmstad | 28-11-75 | 9-4-76 |
| R 135 Västeras | 15-5-74 | 25-10-74 | R 141 STRÖMSTAD | 26-4-76 | 13-9-76 |
| R 136 Västervik | 2-9-74 | 15-1-75 | R 142 Ystad | 3-9-76 | 10-12-76 |



Halmstad (R 140) - with 2 RBS-15, 6 TT, EW dome

H. Ehlers, 5-84



Umea (R 137) - with 2 RBS-15, 2 TT, 4 Elma RL

L. & L. Van Ginderen, 8-85

D: 190 tons (230 fl) S: 40.5 kts Dim: $43.6 \times 7.1 \times 1.6$ (2.4 props) A: 2/RBS-115 SSM - 6/533-mm TT -4/Elma ASW RL (IX \times 4)

Electron Equipt: Radar: 1/Scanter 009, 1/Sea Giraffe 50HC, 1/PEAB 9LV200 Mk 1

EW: Saab-Scania EWS-905 (not in all)

M: 3 Rolls-Royce Proteus gas turbines; 3 props; 12,900 hp

Man: 7 officers, 20 men

Remarks: All reequipped for the Saab RBS-15 cruise missile during 1982-85. Two missiles are normally carried, plus six 533-mm torpedo tubes for wire-guided Type 61 torpedoes. The fire-control system is an analog version of the digital system used in the *Hugin* class. The gas turbines exhaust through the transom to provide residual thrust. Mines can be substituted for the missiles and the torpedo tubes, the forward-most of which must be swung out several degrees before firing. All to receive Saab-Scania EWS-905 passive intercept equipment, and the MARIS 880 (SRA) weapons-control system, which permits over-the-horizon targetting data to be received from a helicopter. All have 6 rails for 103-mm rocket radar flares on the 57-mm gunmount.

TORPEDO BOATS

◆ 4 Spica class (In serv. 1966-68) Bldrs: T 121, 123: Götaverken; others: Karlskronavarvet

L L T 121 SPICA 26-4-66 T 125 VEGA 7-6-67 T 123 CAPELLA 26-4-66 T 126 VIRGO 7-6-67

D: 190 tons (235 fl) **S**: 40 kts **Dim**: 42.5 × 7.3 × 1.6 (2.6 props)

A: 1/57-mm Bofors SAK 57 Mk 1 DP—6/533-mm TT Electron Equipt: Radar: 1/Scanter 009, 1/H.S.A. M22



Sirius (T 122)

Royal Swedish Navy, 1981

M: 3 Bristol-Siddeley Proteus 1274 gas turbines; 3 KaMeWa CP props; 12,720 hp Electric: 120 kw Man: 7 officers, 21 men

Remarks: Carry four 103-mm (I × 4) and six 57-mm (VI × 1) rocket flare launchers. Mines can be substituted for the torpedo tubes, the forwardmost of which must be swung out several degrees before firing. There are two Rover IS90 gas-turbine generators. No longer scheduled to receive RBS-15 missiles. Sisters Sirius (T 122) and Castor (T 124) stricken 1-7-85.

PATROL BOATS

♦ 3 Dalerö class Bldr: Djupriks Varvet, Rönnäng

V 09 Dalerö (In serv. 21-9-84) V 10 Sandhamn (In serv. 5-12-84) V 11 Osthammar (In serv. 1-3-85)



Dalerö (V 09)

Djupviks, 1984

D: 50 tons (fl) S: 30 kts Dim: 23.40 × 5.10 × 1.05 A: 1/40-mm AA — 2/7.62-mm mg (I × 2) — mines Electron Equipt: Radar: 1/Terma TM 610 M: 2 MTU 8V396 TB83 diesels; 3 props; 2,100 hp Electric: 60 kw Man: 3 officers, 4 men + 3 passengers

Remarks: Ordered 28-2-83 in lieu of further torpedo-boat-to-patrol-boat conversions.



Lysekil (V 08)

L. & L. Van Ginderen, 6-84

PATROL BOATS (continued)

 8 Skanör class Bldr: V 01 - V 04: Kockums, Malmö; others: Naval Dockyard, Stockholm (In serv. 1956-59)

| | Conv. | | Conv. |
|-----------------------|-------|--------------------------|---------|
| V 01 Skanör (ex-T 42) | 12-76 | V 05 ÖREGRUND (ex-T 47) | 1-2-83 |
| V 02 SMYGE (ex-T 43) | 1977 | V 06 SLITE (ex-T 48) | 15-4-83 |
| V 03 ARILD (ex-T 45) | 1977 | V 07 Marstrand (ex-T 50) | 16-5-83 |
| V 04 VIKEN (ex-T 44) | 1977 | V 08 Lysekil (ex-T 52) | 13-6-83 |

D: 40 tons (44.5 fl) **S:** 27 kts **Dim:** $23.0 \times 5.9 \times 1.2$ (1.4 props)

A: 1/40-mm AA Electron Equipt: Radar: 1/Scanter 009

M: 2 MTU 8V396 diesels; 2 props; 1,600 hp

Remarks: First four converted at Karlskrona 1976-77 for service as surveillance boats; original three gasoline engines replaced for safety and economy. The second batch converted 1981-83 by Djupriks Varvet, with V 05 recommissioning 14-1-83, V 06 on 15-4-83, V 07 on 16-5-83, and V 08 on 13-6-83. Have one six-railed 57-mm rocket flare launcher on the bow. Conversion of four more canceled in favor of building the three Dalerö-class patrol boats.

Bldr: Karlskrona (All in serv. 1954) • 4 Hanö-class former minesweepers

V 52 Tärnö (ex-M 52) V 54 STURKÖ (ex-M 54) V 53 Tjurkö (ex-M 53) V 55 ORNÖ (ex-M 56)



Ornö (V 55)

L. & L. Van Ginderen, 3-82

D: 270 tons S: 14.5 kts Dim: 42.0 (40.0 pp) \times 7.0 \times 2.7 A: 2/40-mm AA (I \times 2) Electron Equipt: Radar: 1/Scanter 009

M: 2 Nohab diesels; 2 props; 910 hp Man: 25 tot.

Remarks: In service since 1954. Redesignated as patrol craft on 1-1-79. Have steel hulls. Renumbered with V-series pendants on 1-1-79. Each has one six-railed 57-mm rocket flare launcher. Two sisters, Hanö (V 51) and Utö (V 56) stricken 1980.

Note: Naval Reserve training patrol craft SVK 11 and SVK 12 were redesignated as minesweeping boats in 1983; patrol craft SVK 1 and SVK 2 were stricken 1983.

MINE WARFARE SHIPS

• 1 fleet minelaying/training ship Bldr: Karlskrona

Laid down In serv. M 04 CARLSKRONA (ex-Karlskrona) 28-5-80 19-3-82



Carlskrona (M 04) - with revised funnel

L. & L. Van Ginderen, 5-85

D: 3,130 tons (3,300 fl) **S:** 20 kts **Dim:** 105.70 (97.50 pp) \times 15.2 \times 4.00 **A:** 2/57-mm Bofors DP (I \times 2) — 2/40-mm Bofors AA (I \times 2) — 105 mines Electron Equipt: Radar: 1/Scanter 009, 1/Raytheon . . . , 1/Sea Giraffe HC50, 2/PEAB 9LV200 Mk 2 (9LV400 system)

Sonar: Simrad SQ3D/SF

M: 4 Nohab-Polar F212-D825, 12-cyl. diesels; 2 CP props; 10,560 hp Electric: 2,570 kVA Man: 118 crew + 136 cadets, 46 instructors

REMARKS: Ordered 25-11-77 to replace cadet training ship Alvsnabben, which, in the event, expired before her completion. Intended to act as a mine countermeasures ship support tender and submarine torpedo hard target in peacetime, when not conducting the annual Cadet Training Cruise. Hull reinforced below waterline to permit exercise torpedo hits; there are 14 watertight compartments. A bow-thruster is fitted. Has two complete combat information centers (CIC), one duplicating that of a Hugin and one duplicating a Spica-II. Extensive navigational systems, including Decca Navigator and Omega receivers. Raised helicopter deck above fantail. Name changed to honor

the Swedish king. There are 2 lead-computing optical directors to control the 40-mm AA, and 2 radar/optronic 9LV200 Mk 2 directors for the 57-mm guns.

2 Älvsborg-class minelayers Bldr: Karlskrona

| | Laid down | L | In serv. |
|---------------|-----------|----------|----------|
| M 02 ÄLVSBORG | 11-68 | 11-11-69 | 10-4-71 |
| M 03 Viborg | 16-10-73 | 22-1-75 | 6-2-76 |



Viborg (M 03)

L. & L. Van Ginderen, 8-85



Älvsborg (M 02)

L. & L. Van Ginderen, 8-85

D: 2,660 tons (fl) (M 03: 2,450 fl) **S:** 16 kts **Dim:** 92.4 (83.3 pp) \times 14.7 \times 4.0 A: 3/40-mm AA (I × 3) - 300 mines Electric: 1,200 kw

Electron Equipt: Radar: 1/Scanter 009, 1/Raytheon . . . , 1/H.S.A. M22 f.c.

M: 2 Nohab-Polar 12-cyl. diesels; 1 CP prop; 4,200 hp Man: 97 tot.

Remarks: M 02 is used as a submarine tender in peacetime and has accommodations for 205 submarine crew members. M 03 is equipped as Flagship, Coastal Fleet, and has accommodations for 158 flag staff. Each has a helicopter deck. Radar suit expanded 1977-78. An intercept array is mounted on the mast just forward of the stack.

◆ 2 (+4+2) Landsort (M80)-class coastal minesweeper/hunters Bldr: Karlskronavarvet

| | Laid down | L | In serv. |
|---------------|-----------|----------|----------|
| M 71 LANDSORT | 5-10-81 | 22-11-82 | 19-3-84 |
| M 72 ARHOLMA | 13-2-82 | 10-10-84 | 23-11-84 |
| M 73 Koster | 1-9-84 | | |
| M 74 KULLEN | 1-1-85 | | |
| M 75 VINGA | | | |
| M 76 VEN | 14-4-2 | | 2.2 |



Arholma (M 72)

Karlskrona, 1984

D: 310 tons (360 fl) **S:** 15 kts **Dim:** $47.50 (45.00 \text{ pp}) \times 9.60 \times 2.30$

A: 1/40-mm AA - 4/Elma ASW RL (IX × 4) - mines

Electron Equipt: Radar: 1/. . . nav.

Sonar: Thomson-CSF TSM 2022

M: 4 Saab-Scania DSI-14 diesels; 2 Voith-Schneider vertical cycloidal props; 1,440 hp

Electric: 585 kVA Range: 2,000/12 Man: 7 officers, 32 men

MINE WARFARE SHIPS (continued)

Remarks: Glass-reinforced plastic construction, based on Swedish Coast Guard's TV 171. First pair ordered 25-2-81. Next four ordered 31-1-84; two more planned for 1987-88. PEAB 9LV100 optronic director for the gun. Y-shaped portable mine-rail arrangement, with single laying-point. Computerized integrated navigational/mine system and gun-control system by Philips Elektronikindustier AB (PEAB) in conjunction with Decca-Racal. After the first two, may use the Krupp-Atlas KAE II H sonar with Racal MAINs minehunting control system. Carry 2 SUTEC "Sea Eagle" remote-controlled mine-disposal vehicles, as well as controlling three SAM, glass-reinforced plastic, self-propelled magnetic/acoustic catamaran minesweeping devices.

♦ 5 radio-controlled mine countermeasures craft

SAM 1 (In serv. 29-3-83) SAM 4 (In serv. 26-5-83) SAM 2 (In serv. 29-3-83) SAM 5 (In serv. 17-6-83)

SAM 3 (In serv. 26-5-83)

D: 15 tons S: 8 kts Dim: 18.0 × 6.0 × 0.7 (1.6 prop)

M: 1 Volvo-Penta TAMD 70D diesel; 2 Schöttel shrouded props; 210 hp

Range: 330/7

These craft are also built by Karlskrona: The catamarans also automatically lay swept channel-marking danbuoys. An eventual total of 20 SAMs is planned.

♦ 7 Arkö-class coastal minesweepers

| | L | In serv. | | L | In serv. |
|-------------|---------|----------|-------------|------|----------|
| M 57 Arkö | 21-1-57 | 1958 | M 64 Hasslö | 1962 | 1962 |
| M 58 Spárö | 1957 | 1958 | M 67 Námdö | 1964 | 1964 |
| M 61 Styrsö | 1961 | 1962 | M 68 Blidő | 1964 | 1964 |
| M 62 Skaftő | 1961 | 1962 | | | |

Bldrs: Odd numbers - Karlskrona; even numbers - Hälsingborg



Styrsö (M 61)

L. & L. Van Ginderen, 7-85

D: 285 tons (300 fl)
 S: 14.5 kts
 Dim: 44.4 × 7.5 × 2.5 (3.0 prop)
 A: 1/40-mm AA
 M: 2 MTU 12V493 diesels; 2 props; 1,000 hp
 Man: 25 tot.

Remarks: Wooden-hulled construction. M 61 through M 68 have a curved rubbingstrake line along the hull side; in earlier ships there are two strakes, paralleling the hull sheer. Have one six-railed 57-mm rocket flare launcher. Sisters Karlsö (M 59), Iggö (M 60) and Aspö (M 63) stricken 1984, Vinö (M 65) and Vallö (M 66) in 1985.

3 Gåssten-class inshore minesweepers

| | Bldr | L | In serv. |
|--------------|--------------------|---------|----------|
| M 31 GASSTEN | Knippla SY | 11-72 | 16-11-73 |
| M 32 Norsten | Hellevikstrands SY | 4-73 | 12-10-73 |
| M 33 VIKSTEN | Karlskrona | 18-4-74 | 1-7-74 |



Norsten (M 32) - wooden hull

L. & L. Van Ginderen, 5-83



Viksten (M 33) - GRP hull

L. & L. Van Ginderen, 5-83

D: 120 tons (M 33: 130 tons) **S:** 11 kts **Dim:** 23.0 (M 33: 25.3) \times 6.6 \times 3.7 **A:** 1/20-mm AA **M:** 1 diesel; 1 prop; 460 hp

Remarks: The hull of M 33 is made of glass-reinforced plastic; she was intended to serve as the prototype for a new class of 300-ton, 43-meter coastal minesweepers, which were not built. The other two are built of wood. A 20-mm AA gun has replaced the 40-mm/60-cal. originally carried.

• 7 Hisingen-class inshore minesweepers

| | L | | L |
|---------------|------|----------------|------|
| M 43 Hisingen | 1960 | M 47 GILLÖGA | 1964 |
| M 44 Blackan | 1960 | M 48 RÖDLÖGA | 1964 |
| M 45 Dämman | 1960 | M 49 Svartlöga | 1964 |
| M 46 GALTEN | 1960 | | |



Hisingen (M 43)

H. Ehlers, 4-85

D: 140 tons **S:** 9 kts **Dim:** 22.0 × 6.4 × 1.4 **A:** 1/20-mm AA **M:** 1 diesel; 1 prop; 380 hp

Remarks: Wooden-hulled fishing boats. M 47 through M 49 have higher bridges and bluffer bow lines. A 20-mm AA has replaced the original 40-mm/60-cal. AA in all.

• 6 M 15-class inshore minesweepers (All L: 1941)

M 21 through M 26

D: 70 tons S: 12-13 kts Dim: 27.7 × 5.05 × 1.4 (2.0 props) A: 1/20-mm AA M: Diesels; 1 prop; 320-430 hp Man: 10 tot.

Remarks: Wooden hulls. M 21, M 22, M 25 are used as tenders for mine clearance divers. Sisters M 15 and M 16 were stricken during 1984. See photo next page.

♦ 4 minesweeping boats (In serv. 1955-56)

SVK 11 (ex-Tv 226) SVK 12 (ex-Tv 228) SVK 13 SVK 14

D: 12 tons S: 20 kts Dim: 14.0 × 3.4 × 1.2

A: 1/20-mm AA M: 1 Volvo Penta diesel; 1 prop; . . . hp

Remarks: Used for Naval Reserve training. Reclassified from patrol craft in 1983.

MINE WARFARE SHIPS (continued)

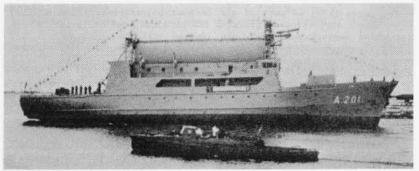


M 22 — note sweep gear and gun deleted, new pole mast atop pilothouse
L. & L. Van Ginderen, 8-85

AUXILIARIES

♦ 1 intelligence collection ship Bldr: Karlskronavarvet

Laid down L In serv. A 201 Orion 23-4-82 30-11-83 7-6-84



Orion (A 201) at launch

Karlskrona, 1983

D: 1,400 tons (fl) **S**: . . . **Dim**: $61.3 \times 11.0 \times 4.2$

A: None

M: 2 Hedemora V8A/135 diesels; 1 CP prop; 1,840 hp

Man: 35 tot.

Remarks: Ordered 25-6-81. To last 30 years. Signal collection antennas beneath a large glass-reinforced plastic radome atop full length of the superstructure.

1 coastal tanker Bldr: D. W. Kremer Sohn, Elmshorn, West Germany (In serv. 1965)

A 228 Brannaren (ex-Indio)

D: 857 tons (fl) S: 11 kts

Dim: 61.71 (56.76 pp) × 8.6 × 3.57

M: 1 MAK 6 Mu 51 diesel; 1 prop; 800 hp

Remarks: Eight cargo tanks totaling 1,170 m3. Purchased in 1972.



Brannaren (A 228) Royal Swedish Navy, 1972

♦ 1 submarine rescue and salvage ship

L In serv. A 211 Belos 15-11-61 29-5-63



Bldr: . . .

Belos (A 211)

L. & L. Van Ginderen, 8-85

D: 965 tons (fl) **S:** 13 kts **Dim:** $62.3 \times 11.2 \times 4.0$ **M:** 2 diesels; 2 props; 1,200 hp

Remarks: Well-equipped for underwater search: decompression chamber, active rudder, underwater television, and a small helicopter deck. Modernized in 1979-80 to support the URF submarine-rescue submersible.

SERVICE CRAFT

♦ 1 harbor tanker Bldr: Asiverken, Åmål (In serv. 4-59)

A 229 ELDAREN (ex-Brotank)

D: 231 grt/320 dwt S: 8 kts Dim: 37.22 (34.14 pp) × 6.53 × 2.95

M: 2 Volvo Penta 6-cyl. diesels; 1 CP prop; 420 hp

Remarks: Purchased 5-81 from commercial service.

◆ 1 water tanker (L: 1959)

A 217 FRYKEN

D: 307 tons S: 10 kts Dim: 34.4 (32.0 pp) × 6.1 × 2.9

M: 1 diesel; 1 prop; 370 hp

Note: Water tanker *Unden* (A 216) stricken 1983, and provisions lighter *Freja* (A 221) stricken 1984.

• 1 torpedo- and missile-recovery craft Bldr: Lundervary-Ooverkstads AB,

Kramfors
L In serv.

A 248 PINGVINEN 26-9-73 3-75



Pingvinen (A 248)

L. & L. Van Ginderen, 8-85

D: 191 tons S: 13 kts Dim: 33.0 × 6.1 × 1.8 M: 2 MTU 12V493 diesels; 2 props; 1,040 hp

Remarks: Similar to A 247 but has superstructure aft, 2 articulated cranes, and bow bulwarks.

SERVICE CRAFT (continued)

♦ 1 torpedo and missile recovery craft (L: 9-63)

A 247 PELIKANEN



Pelikanen (A 247) - with RB-08A missile

Royal Swedish Navy, 1974

D: 130 tons **S:** 15 kts **Dim:** $33.0 \times 5.8 \times 1.8$ **M:** 2 MTU 12V493 diesels; 2 props; 1,040 hp

♦ 1 torpedo-recovery craft (L: 1951)

A 246 HÄGERN



Hägern (A 246)

H. Ehlers, 9-83

D: 50 tons S: 10 kts Dim: 29.0 × 5.4 × 1.6 M: 2 diesels; 2 props; 480 hp

• 1 trials craft (L: 1969)

A 241 URD (ex-Capella)

D: 63 tons (90 fl) S: 8 kts Dim: 27.0 × 5.6 × 2.8 M: 2 diesels; 200 hp REMARKS: Acquired 1970.

♦ 2 mine transport lighters

L L A 236 Fällaren 1941 A 237 Minören 1940

D: 165 tons S: 9 kts Dim: 31.5 × 6.1 × 2.1 M: 2 diesels; 1 prop; 240 hp

◆ 1 laundry ship (L: 1961)

A 256 SIGRUN



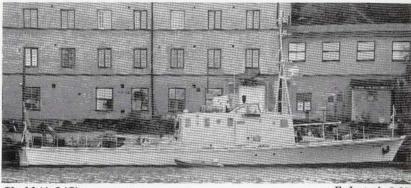
Sigrun (A 256)

Royal Swedish Navy, 1974

D: 250 tons S: 11 kts Dim: 32.0 × 6.8 × 3.6 M: 1 diesel; 1 prop; 320 hp REMARKS: Probably the world's only camouflaged floating laundry, and certainly the fastest.

$\bullet\,$ 1 M 15-class general-purpose tender, former minesweeper (L: 1941)

A 242 SKULD (ex-M 20)



Skuld (A 242)

F. Jentsch, 8-85

D: 70 tons (fl) **S:** 13 kts **Dim:** $26.0 \times 5.0 \times 1.4$ **M:** 2 diesels; 2 props; 410 hp

Remarks: Wooden-hulled craft used for mine warfare trials; new deckhouse added abaft original pilothouse. Sisters *Lommen* (A 231, ex-M 17) and *Spoven* (A 232, ex-M 18) stricken 1984.

Note: Five L 51-class stores lighters were stricken in 1983.

• 2 stores lighters

A 341 ATB 1 A 342 ATB 2



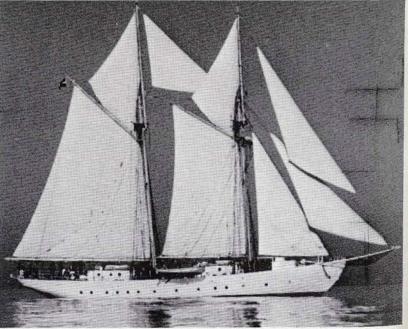
ATB 1 (A 341)

G. Gyssels, 1981

Remarks: No data available. Four other small stores lighters were stricken in 1983: Granatan (A 345), Edda (A 347), Gerda (A 349), and ATB 3.

• 2 sail-training schooners

S 01 GLADAN (L: 1947) S 02 FALKEN (L: 1948)



Falken (S 02)

Royal Swedish Navy, 1981

SERVICE CRAFT (continued)

D: 220 tons S: . . . kts Dim: 42.5 (28.3 pp) \times 7.27 \times 4.2 M: 1 diesel auxiliary; 1 prop; 50-hp; sail area 512 m²

◆ 2 diving tenders Bldr: Storebro Bruks AB (In serv. 1980)

D: . . . tons S: 24 kts Dim: $10.35 \times 3.30 \times 1.0$ Electron Equipt: Radar: 1/Decca 091

M: 2 Volvo Penta TAMD 60 diesels; 2 props; 370 hp

REMARKS: Fold-down door at stern. 1.7-ton useful load.

♦ 2 range safety boats Bldr: Storebro Bruks AB (In serv. 1980)

REMARKS: Data as for diving tender version above.

♦ 3 personnel launches Bldr: Storebro Bruks AB (In serv. 1980)

D: 5.5 tons (fl) S: 24 kts Dim: 9.30 × 3.30 × 1.0 M: 2 Volvo Penta TAMD 60 diesels; 2 props; 370 hp

Remarks: Builder's Type 31 design; glass-reinforced plastic construction. Can carry 25 men or 6 stretchers.

TUGS

• 2 Herkules-class icebreaking tugs

A 323 HERKULES (L: 1969) A 324 HERA (L: 1971)

D: 127 tons **S:** 11.5 kts **Dim:** $21.4 \times 6.9 \times 3.7$ **M:** Diesels; 615 hp

* 2 Achilles-class icebreaking tugs (L: 1962, 1963)

A 251 ACHILLES A 252 AJAX



Achilles (A 251)

L. & L. Van Ginderen, 2-82

D: 450 tons **S:** 12 kts **Dim:** 35.5 (33.15 pp) \times 9.5 \times 3.9

M: Diesels; 1,650 hp Electron Equipt: Radar: 1 or 2/Decca 1226C

♦ 3 Hermes-class icebreaking tugs (L: 1953-57)

A 253 Hermes A 321 Hector A 322 Heros

D: 185 tons **S:** 11 kts **Dim:** 24.5 (23.0 pp) \times 6.8 \times 3.6

M: Diesel; 600 hp

♦ 5 small harbor tugs/tenders Bldr: Lundevary (In serv. 1978-79)

A 751-755

D: 42 tons (fl) **S:** 9.5 kts **Dim:** $15.5 \times 5.0 \times 2.7$

M: 1 diesel

REMARKS: Can break thin ice. Carry 40 passengers.

• 3 miscellaneous small tugs

A 326 Hebe A 327 Passop A 330 Atlas

Remarks: No data available. Small tugs *Henrik* (A 329) and *Vitsgarn* (A 336) stricken 1983.



Atlas (A 330)—a small push-tug with vertical cycloidal propellers

L. & L. Van Ginderen, 5-81

MINISTRY OF TRANSPORT

ICEBREAKERS

Note: All Swedish icebreakers are owned by the Ministry of Transport, but are manned and administered by the Swedish Navy. In 1984, it was decided to permanently arm all seagoing icebreakers.

♦ 3 Finnish Urho class Bldr: Wärtsilä, Helsinki, Finland

| | Laid down | L | In serv. |
|------|-----------|----------|----------|
| ATLE | 10-5-73 | 27-11-73 | 21-10-74 |
| FREJ | | 3-6-74 | 30-9-75 |
| YMER | 12-2-76 | 3-9-76 | 26-10-77 |



D: 7,800 tons **S**: 19 kts **Dim**: 104.6 (99.0 pp) × 23.8 × 7.8

A: 4/40-mm AA (I × 4) -3 mine rails

M: 5 Wärtsilä-Pielstick 5,000-bhp diesels; diesel-electric drive; 4 props; 22,000 hp Man: 16 officers, 38 men

REMARKS: Two props forward, two aft. Helicopter platform. All personnel live and normally work above the main deck. Given permanent gun armament, mine rails, and fuel facilities for helicopters: *Frej* in 10-83, others in 1984.

◆ 1 Ale class Bldr: Wärtsilä, Helsinki, Finland

L In serv. Ale 1-6-73 12-12-73



L. & L. Van Ginderen, 8-82

ICEBREAKERS (continued)

D: 1,488 tons **S:** 14 kts **Dim:** $46.0 \times 13.0 \times 5.0$ M: Diesels; 2 props; 4,750 hp Man: 21 tot.

Remarks: Built for service on Lake Vänern in central Sweden, also used for surveying in summer.

• 1 modified Tor class Bldr: Wärtsilä, Helsinki, Finland

In serv NJORD 2-10-68 10-69



Njord

L. & L. Van Ginderen, 2-85

D: 5,150 tons (5,686 fl) **S**: 18 kts **Dim**: 86.45 (79.45 pp) \times 21.18 \times 6.9

A: 3/40-mm AA (I × 3)

M: Diesel-electric propulsion: 4 Sulzer 9MH-51 diesels; Stromberg electric motors, 2 fwd (3,400 kw each), 2 aft (2,200 kw each); 4 props; 13,620 hp

• 1 Tor class Bldr: Wärtsilä, Turku, Finland

L In serv. TOR 25-5-63 31-1-64



Tor

Wärtsilä

D: 4,980 tons (5,290 fl) **S:** 18 kts **Dim:** $84.4 \times 20.42 \times 6.2$

A: 3/40-mm AA (I × 3)

M: Diesel-electric propulsion, 4 Sulzer 9MH-51 diesels; 4 props; 11,200 hp. Same motors as the Njord.

Remarks: The Finnish Tarmo is similar. Two propellers fwd, two aft.

• 1 Oden class Bldr: Sandviken, Helsinki, Finland

In serv.

1958 ODEN 16-10-56



Oden

L. & L. Van Ginderen, 3-82

D: 4,950 tons (3,370 light) S: 17 kts

Dim: 83.35 (78 pp) \times 19.4 \times 6.9

M: Diesel-electric; 4 props (2 fwd, 2 aft); 10,500 hp

Fuel: 740 tons Man: 75 tot.

Remarks: Very similar to the Finnish Voima and the three Soviet Kapitan Belousov class. Can be armed with 4/40-mm AA (I × 4). Refitted 1984-85.

 2 Thule class Bldr: Karlskrona

L In serv. THULE 10-51 1953



Thule

L. & L. Van Ginderen, 3-82

D: 2,280 tons (fl) S: 14 kts Dim: 57.00 × 16.07 × 5.90 M: 3 diesels, electric drive; 3 props (1 fwd); 4,800 hp Man: 43 tot.

Remarks: A 1980 plan to convert this ship to act as a mine countermeasures support

ship was apparently canceled.

Bldr: Åsiverken AB ◆ 1 harbor icebreaker/navigational aids tender

Baltica (In serv. 1982)

D: 1,238 tons (fl) S: 15 kts Dim: 54.9 (50.0 pp) × 12.0 × 3.7 (mean)

Electron Equipt: Radar: 1/Decca "Arpa," 1/Decca "Clearscan"

M: 2 Hedemora V16A/12 diesels; 1 CP prop; 3,520 hp Electric: 1,375 kVA Fuel: 140 tons Man: 12 tot.

Remarks: 857 grt/252 nrt. Two 300-hp tunnel side-thrusters. Twelve-ton electrohydraulic crane serving combination buoy hold/workshop. Can tow at 50-ton bollard pull. Capable of operating in light ice conditions. Civilian-manned.

HYDROGRAPHIC SHIPS

Note: Swedish hydrographic ships are operated by the Navy, but are owned by the Ministry of Transport. The icebreaker Ale also performs survey tasks.

Bldr: Oskarshamns SY 1 new-construction survey ship

NILS STRÖMKRONA (In serv. 28-6-85)

D: 168 tons (fl) S: . . . Dim: . . . × . . . × . . .

Remarks: Built to replace 1894-vintage unit with the same name.

Bldr: Falkenbergs Varvet 1 seagoing survey ship

Laid down L In serv.

1-11-79 JOHAN NORDENANKAR 1977 1-7-80

D: 2,000 tons (fl) S: 15 kts Dim: 73.0 (64.0 pp) × 14.0 × 3.8 Electron Equipt: Radar: 1/Raytheon Raycas, 1/Decca. M: 2 Hedemora V16A/12 diesels; 2 KaMeWa CP props; 3,520 hp Electric: 2,246 kVA Man: 66 tot.

REMARKS: Acts as mother ship for nine small survey craft that act in teams. Data collected by the launches are telemetered to the ship and collected via the Krupp-Atlas computer. There are three sets of davits per side, with 3 additional boats in an internal hangar. Ship very maneuverable, with 700-hp drop-down bow-thruster, which can also drive the ship at 4.5 kts, and a Becker KSV flap-rudder; turning radius 150 m. Navigation equipment includes Decca Navigator, Magnavox NAVSAT receiver, Decca Sea Fix, Syledis Ranger, Syledis Miniranger, and 8 echo-sounders. Passive tank stabilization. Helo platform aft. Hull red, superstructure white.

♦ 1 seagoing survey ship ((L: 14-1-66)

JOHAAN MANSSON

D: 977 tons (1,030 fl) S: 15 kts 'Dim: 56.0 × 11.0 × 2.6

M: Nohab-Polar diesel; 3,300 hp Man: 85 tot.

Remarks: Survey boats are stowed in a hangar aft and launched/recovered via a ramp.

HYDROGRAPHIC SHIPS (continued)



Johann Månsson

Royal Swedish Navy, 1975

1 coastal survey boat

Bldr: Djupviks, Rönnäng (In serv. 10-82)

JACOB HÄGG

D: 130 tons (fl) S: 16.5 kts Dim: 36.50 × 7.50 × 1.65 M: 4 Saab-Scania DSI-14 diesels; 2 props; 1,684 hp (1,300 sust.)

Remarks: Aluminum construction. The same builder also delivered a 42-ton, 400-hp hydrographic survey launch in 1953. The former "lead boats" No. 1 and No. 94 were named Sirius and Kompass in 1982, respectively, and now operate independently.

2 coastal survey ships

Ran (L: 1945)

D: 285 tons S: 9 kts Dim: 30.0 × 7.0 × 2.6 M: 1 diesel; 1 prop; 260 hp Man: 37 tot.

ANDERS BURE (ex-Rali)

D: 54 tons S: 15 kts Dim: 24.6 × 5.9 × 2.0 M: 2 diesels; 2 props; . . . hp Man: 11 tot.

REMARKS: Former yacht dating from 1968, bought in 1971.

COASTAL ARTILLERY SERVICE

PATROL CRAFT

• 17 61 class

61 to 77



62

H. Ehlers, 4-85

D: 28 tons (30 fl) S: 19 kts Dim: 21.1 × 4.6 × 1.3 A: 1/20-mm AA M: 2 diesels; 2 props; . . . hp Electron Equipt: Radar: 1/Decca RM914C

Remarks: Built in two series, nos. 61 to 70 in 1960-61 and nos. 71 to 77 in 1966-67. Note: Single-unit patrol craft V 57 was stricken 1985.

MINELAYERS

 ↑ 1 (+1+8) MUL 20 class Bldr: Åsiverken, Araal

In serv. In serv. MUL 20 FURUSUND 10-10-83 16-12-82 MIII. 22 N MUL 21 N. . .

D: 225 tons (245 ff) S: 11 kts Dim: 32.4 (30.0 pp) \times 8.4 \times 1.8 A: 1/20-mm AA — 2/7.62-mm mg (I \times 1) — 24 tons mines

Electron Equipt: Radar: 1/Decca RM 1226C

M: 2 Saab-Scania GASI-14 diesels (335 hp each), ASEA 300 kVA electric drive; 2 props; 420 hp + 1/125-hp maneuvering prop

Man: 24 tot. (10 peacetime) Electric: 73 kw

Remarks: MUL 20 ordered 23-6-81. An ultimate total of ten is planned.



Furusund (MUL 20)

Royal Swedish Navy, 1984

♦ 8 MUL 12-class mine planters (In serv. 1952-56)

MUL 15 N. . . MUL 18 ÖRESUND MUL 16 N. . . MUL 13 KALMARSUND MUL 19 N. . . MUL 17 N. . . MUL 14 N. . .



Kalmarsund (M 13)

H. Ehlers, 4-85

D: 245 tons S: 10.5 kts Dim: 31.18 (29.0 pp)"× 7.62 × 3.1

A: 1/40-mm AA . . . mines Electron Equipt: Radar: 1/Decca RM 1226C M: 2 Nohab diesels; 2 props; 460 hp

Remarks: Launched 1952-56. These craft are used for placing and maintaining controlled mine fields. Being given names 1985-86.

◆ 1 coastal mine planter (L: 1946)

MUL 11



MUL 11

L. & L. Van Ginderen, 10-82

MINELAYERS (continued)

D: 200 tons **S**: 10 kts **Dim**: 30.1 (27.0 pp) \times 7.21 \times 3.65

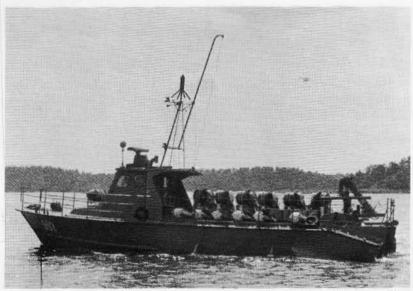
A: 2/20-mm (I × 2) - mines

M: 2 Atlas diesels; 1 prop; 300 hp

Remarks: Will probably be replaced by MUL 20.

◆ 42 501-class minelaying launches (L: 1969-71)

501 through 542



502

Royal Swedish Navy, 1981

D: 14 tons (fl) S: 14 kts Dim: 14.6 × 4.2 × 0.9

A: 12 mines Electron Equipt: Radar: 1/Decca RM 914C

M: Diesels Man: 7 tot.

Note: The 81 201-series personnel landing craft can also be fitted to lay mines.

Bldr: Marinvarvet, Fårösund • 6 small minelaying craft

1879-1881 (In serv. 4-7-83) 1882-1884 (In serv. 23-1-84)

Remarks: Displace 2.5 tons; no other data available.

LANDING CRAFT

• 3 Grim-class utility landing craft

Bldr: Asiverken

HEIMDAL



Bore

Royal Swedish Navy, 1969

D: 340 tons (fl) S: 12 kts Dim: 36.0 × 8.5 × 2.6

A: None M: 2 diesels; 2 props; 800 hp

REMARKS: Grim was launched in 1962, Bore and Heimdal in 1967. Car ferry design; bow hinges upward to permit extending ramp. Can be adapted to lay mines.

• 2 Sleipner-class utility landing craft

SKAGUL (L: 1960) SLEIPNER (L: 1959)

D: 335 tons S: 10 kts Dim: 35.0 × 8.5 × 2.9

A: None M: 2 diesels; 2 props; 640 hp

Remarks: Similar to the Grim class. Can be adapted to lay mines.

◆ 4 Ane-class utility landing craft (L: 1943-45)

324 ANE 325 Balder 326 Loke 327 Ring

D: 135 tons S: 8.5 kts Dim: 28.0 × 8.0 × 1.8 A: 1/20-mm AA M: 2 diesels Remarks: Equipped with a bow ramp. Can be adapted to lay mines.



Loke - guns not mounted

L. & L. Van Ginderen, 10-82

 ♦ 9 (+8) vehicle landing craft varvet, Fårösund

Bldr: Djupviks, Tjoern; Oskarhamms; Marin-

601-605, 651-. . .



603

H. Ehlers, 4-85

D: 20 tons (53 fl) S: 8-10 kts Dim: 21.0 (20.0 pp) × 7.2 × . . .

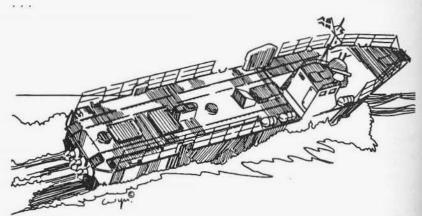
A: . . . Electron Equipt: Radar: 1/Decca RM 914C

M: 2 Saab-Scania DSI-11/40-M20 diesels; 2 Schöttel props; 340 hp Cargo: 25 tons deck cargo or 30 tons liquid Man: . . .

Remarks: The prototype was delivered in 1978; the next 8 were to be delivered 1982-85. No. 603 delivered 2-4-84 by Mariavarvet; Nos. 604, 605 delivered 1-10-84 by Djupviks.

 ◆ 1 (+ . . .) M 85-class large personnel landing craft Fårösund

Bldr: Marinvarvet,



M 85 design

1984

D: 55 tons (65 fl) S: 20 kts Dim: 28.40 (24.00 pp) × 5.60 × 0.80

A: 2 or 3/7.62-mm mg (I × 2 or 3) - mines

Electron Equipt: Radar: 1/. . . nav.

M: 3 Saab-Scania DSI-14 diesels; 3 waterjets; 1,350 hp

Man: 4 crew + 45 troops

LANDING CRAFT (continued)

Remarks: Aluminum prototype replacement design for 201-series. Ordered 27-7-84; laid down 5-12-84. As many as 140 may be built.

* 80 201-series large personnel landing craft

Bldrs: Lundevarv Verkstads and Marinteknik, Oregrund (In serv. 1957-77) 201 through 208; 210 through 276; 280 through 284



201 class

L. & L. Van Ginderen, 7-85



281-with mine rails

L. & L. Van Ginderen, 5-81

D: 31 tons (fl) S: 17 kts Dim: 21.4 × 4.2 × 1.3 A: 2 or 3/6.5-mm mg (II × 1, I × 1) — mines Electron Equipt: Radar: 1/Decca RM 914C

M: 3 Saab-Scania 6 DS 11 diesels; 3 props; 705 hp Man: 5 crew, 40 troops

Remarks: 266 through 269 have Volvo Penta diesels. Early units were 20 meters overall and had three 200-hp diesels. Patrol-boat-like bow opens to permit extension of ramp from troop compartment below decks. Twin machine gun to port, plus single mount aft in some. Mine rails can be laid from the pilothouse over the stern. 210 was re-engined 1984 by Djupviks with 2 Saab-Scania DSI-14 diesels; 2 steerable hydraulic drives; 950 hp; pilot program for a class-wide rehabilitation. 209 was stricken in 1984.

◆ 25 (+ . . .) personnel landing craft

| | L | | | |
|-----------------|---------|-------------|-----------|-----------|
| 370 | 1981 | D: tons | S: kts | M: 560 hp |
| 337 through 354 | 1970-73 | D: 6 tons | S: 21 kts | M: 225 hp |
| 332 through 336 | 1967 | D: 5.4 tons | S: 25 kts | M: 225 hp |
| 331 | 1965 | D: 6 tons | S: 20 kts | |



333 (332 series)

L. & L. Van Ginderen

REMARKS: The prototype of a new series, number 370, was delivered 2-9-81; the craft is powered by two Volvo Penta TAMD 70 diesels. 301 through 330 stricken 1984.

• 20 support tenders

Bldr: Djupriks, Tjoern (In serv. 1982-85)

701-705; 751-756, . . .

D: 42 tons **S:** 9.5 kts **Dim:** $15.5 \times 5.0 \times 2.7$

M: 1 diesel; 1 prop; . . . hp



703 H. Ehlers, 4-85

Remarks: Can be used to transport cargo, personnel, to plant mines or as tugs. Bulwarks at bow open to permit debarking personnel over a beach.

♦ 12 (+ . . .) support tenders

401-412 (+ . . . ?)



L. & L. Van Ginderen, 7-84

Remarks: Wooden-hulled utility tenders. Number in service not available. Powered by a single diesel; have a Decca RM914C radar.

COAST GUARD

The Swedish Coast Guard, organized in 1638, is primarily concerned with rescue and customs services and with anti-pollution patrol and cleanup. In addition to some 130 boats and craft, it also operates 2 Cessna F337G patrol aircraft with side-looking radar (SLAR), one Cessna 402C (a second is planned), and a chartered helicopter. All boat pendants are prefixed "Tv" — Tullverket (Central Customs Office). The Coast Guard is organized into four Regions, with a total of 15 Districts; each District has 2 to 4 stations. All units are painted white and have a narrow red diagonal stripe on each side of the hull. None are armed.

PATROL BOATS AND CRAFT

◆ 2 Tv 171 class Bldr: Karlskrona

Tv 171 11-79 3-9-80 Tv 172 13-9-80 10-81

D: 375 tons (fl) S: 20 kts Dim: 49.90 (46.00 pp) × 8.52 × 2.40 Electron Equipt: Radar: 2/Decca navigational—Sonar: Simrad Subsea M: 2 Hedemora V16A/15 diesels; 2 KaMeWa CP props; 4,480 hp Electric: 340 kVA Range: 500/20; 3,000/12 Man: 14 tot.

PATROL BOATS AND CRAFT (continued)



Tv 172

H. Ehlers, 4-85

Remarks: Class "A" cutters. Tv 171 lengthened by 6 m in 1981; Tv 172 longer as completed. Helicopter platform, bow-thruster. Glass-reinforced plastic sandwich hull construction, originally developed for the not-built M 70-class naval minesweeper. Fire monitor can be replaced by a 40-mm gun, and mine rails can be fitted.

♦ 5 Tv 103 class Bldr: Djupviks, Tjoern (In serv. 1969-73)

Tv 101 Tv 102 Tv 103 Tv 104 Tv 105



Tv 105

Swedish Coast Guard

D: 53 tons (fl)
 S: 22 kts
 Dim: 26.72 × 5.23 × 1.13
 M: 2 MTU 8V331 TC82 diesels; 2 props; 1,866 hp
 Electric: 60 kVA
 Fuel: 11 tons
 Range: 1,000/15
 Man: 6 tot.

Remarks: Class "A" cutters. Aluminum construction. Tv 101: **D**: 50 tons (fl); **Dim**: 24.9 × 5.0 × . . . ; pilothouse farther forward than in others. Three sisters in Liberian Coast Guard.

• 8 Tv 271-class (In serv. 1974-77)

Tv 271 through Tv 278



Tv 275

L. & L. Van Ginderen, 8-82

D: 20 tons (fl) S: 20 kts Dim: 19.0 × 4.2 × 1.4 M: 2 Volvo Penta TAMD 120A diesels; 2 props; 700 hp Electric: 46.5 kw Man: 5 tot.

Remarks: Alumimum construction. Tv 271, 272: 18.7 × 4.0 × 1.4. Class "B" cutters.

◆ 1 Tv 116-class steel-hulled (In serv. 1935)

Tv 116

D: 36 tons (fl) S: . . . Dim: 24.4 × 4.2 × . . . M: Diesels

♦ 5 Tv 281-class Bldr: Djupviks, Tjoern (In serv. 1979-80)

Tv 281 Tv 282 Tv 283 (In serv. 1979-80) Tv 284 (In serv. 30-1-84) Tv 285 (In serv. 2-5-84)



Tv 284

H. Ehlers, 4-85

D: 37 tons (fl) S: . . . Dim: 21.0 × 5.0 × . . . M: 2 diesels; 2 props; . . . hp Electron Equipt: 2/Decca . . . nav.

Remarks: Class "B" cutters. Additional units planned. Aluminum construction.

20 Tv 236-class aluminum-hulled class "D" cutters (In serv. 1961-72)
 Tv 236 through Tv 238, TV 240 through Tv 250, Tv 255 through Tv 261



Tv 256

H. Ehlers, 4-85

D: 17 tons S: . . . Dim: 16.2 × 3.7 × . . .

◆ 1 Tv 234-class aluminum-hulled, Class "B" (In serv. 1960)

Tv 234

D: 15 tons (fl) S: . . . Dim: 15.2 × 3.6 × . . .

◆ 4 Tv 251-class aluminum-hulled, Class "B" (In serv. 1958-61)

Tv 251 Tv 252 Tv 253 Tv 254

D: 12 tons (fl) S: . . . Dim: 15.0 × 3.7 × . . .

♦ 3 Tv 220-class

Tv 220 (In serv. 1954) Tv 230 (In serv. 1957) Tv 232 (In serv. 1957)

D: 12 tons (fl) S: 20 kts Dim: 14.0 × 3.4 × . . . M: 1 Volvo Penta diesel; . . . hp

• 26 miscellaneous speedboats (In serv. 1962-79)

Tv 314, 315, 317, 318, 341, 350, 356, 360, 363, 365, 366, 368, 369, 371-374, 381-385, 388-391

• 6 inflatable boats (In serv. 1971-75)

Tv 602, 661-665

• 5 iceboats (In serv. 1965-72)

Tv 801, Tv 804-807—**Dim:** 5.0×2.0

POLLUTION-CONTROL SHIPS AND CRAFT

Note: Class A anti-pollution units are described as "Depôt Ships"; Class B are "Sea Trucks"; Class C are "Base Ships"; and Class D are catamarans.

• 1 Class A Bldr: Lunde, Ramvik

Tv 06 (L: 24-3-85)

D: 450 tons (fl) S: 15 kts Dim: 37.35 (33.70 pp) × 8.80 × . . .

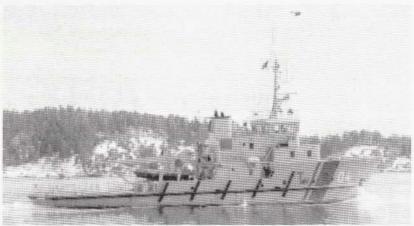
M: 2 Cummins KTA-2300M diesels; 2 rudder props; 2,100 hp

Fuel: 30.5 tons Man: 6 tot.

Remarks: Similar to Tv 04 design; ordered 12-84. Also reported as "Tv 010."

* 2 Class A Bldr: Lunde, Ramvik

Tv 04 (In serv. 1980)



Tv 04

H. Ehlers, 4-85

D: 450 tons (fl) **S:** 12 kts **Dim:** $35.5 \times 8.0 \times 3.0$ M: 2 diesels; 2 props; 1,200 hp Electric: 224 kVA Man: 10 tot.

Remarks: Helipad on fantail, 200-hp bow-thruster, 30-kt workboat, 80 m3 oil-containment tanks, 500-m containment boom stowage, oil-spill skimming equipment, firefighting gear.

• 3 Class A

| | In serv. | D: | Dim: |
|-----------------|----------|---------------|--------------------------------|
| Tv 01 | 1971 | 190 tons (fl) | $26.0 \times 6.7 \times \dots$ |
| Tv 02 Måklappan | 1973 | 260 tons (fl) | $33.0 \times 7.2 \times \dots$ |
| Tv 03 | 1973 | 300 tons (fl) | $34.0 \times 6.6 \times \dots$ |



Måklappan (Tv 02) - the only named Coast Guard unit

H. Ehlers, 4-85



L. & L. Van Ginderen, 5-82

• 2 Tv 050 class, Class B Bldr: Lunde, Ramvik

Tv 050 (In serv. 20-9-83) Tv 051 (In serv. 6-83)



Tv 050

H. Ehlers, 4-85

D: 340 tons (fl) S: . . . Dim: 32.6 × 8.5 × . . . M: Diesels REMARKS: Enlarged version of Tv 045 class.

♦ 5 Class B

Bldr: Lunde, Ramvik (In serv. 1980-83) Tv 048

Tv 045 Tv 046

Tv 047



Tv 048

H. Ehlers, 4-85

D: 133 tons (230 fl) S: 11 kts Dim: 28.9 (24.80 pp) \times 6.5 \times 1.9 Fuel: 18 tons M: 2 Saab-Scania DST-11 diesels; 2 props; 540 hp Electric: 300 kw Man: 4 tot.

Remarks: Resemble landing craft, with bow ramp. 110-m3 tanks for recovered oil. Hydraulic thrusters fore and aft. Stowage for 800-m oil-spill-containment booms. Endless belt-type oil-recovery device.

♦ 3 Tv 041 class, Class B oil-spill combatting boats (In serv. 1972)

Tv 042 Tv 043



H. Ehlers, 4-85

D: 70 tons (fl) S: . . . Dim: 18.4 × 5.4 × . . .

SWEDEN (continued)

POLLUTION-CONTROL SHIPS AND CRAFT (continued)

• 2 miscellaneous Class B oil-spill combatting boats

Tv 044 1976 100 tons (fl) 25.0 × 6.0 Tv 059 1974 22 tons (fl)

* 3 Tv 011 class, Class C

Tv 011 (In serv. 1974) Tv 012 (In serv. 1970) Tv 014 (In serv. 1971)

D: 50 tons (fl) S: . . . Dim: 25.0 × 5.1 × . . .

REMARKS: Wooden construction.

◆ 1 Tv 015 class, Class C (In serv. 1971)

Tv 015

D: 140 tons (fl) S: . . . Dim: 23.0 × 5.5 × . . .

♦ 1 Class D1 catamaran Bldr: Djupvik, Tjoern (In serv. 8-6-82)
Tv 020



Tv 020

L. & L. Van Ginderen, 2-83

D: 60 tons (fl) S: 27 kts Dim: 27.6 × 9.2 × 1.5 M: 2 MTU J2V396 TB82 diesels; 2 props; 2,600 hp

Remarks: Drum-type skimmer mounted forward between the hulls can recover up to 40 tons/hr., or a belt-type cleaner can recover 10-20 tons/hr. Design is Norway's Westermoen 88.

• 3 miscellaneous Class D2 catamarans

| | In serv. | D: | Dim: |
|--------|----------|--------------|-------------------|
| Tv 021 | 1973 | 30 tons (fl) | 14.0×7.0 |
| Tv 022 | 1973 | 30 tons (fl) | 14.0×7.0 |
| Tv 023 | 1975 | 30 tons (fl) | 16.5×7.5 |



Tv 023 — catamaran oil-spill boat

H. Ehlers, 4-85

◆ 4 Class E shore cleaning boats (In serv. 1979-1982)

Tv 0701 Tv 0702 Tv 0703 Tv 0704

D: 9 tons S: . . . Dim: 9.0 × 3.1 × . . .



Tv 0705 - shore cleaning boat (with sister)

H. Ehlers, 4-85

• 6 miscellaneous Class G oil barges

| | In serv. | D: | Dim: |
|--------|----------|---------------|--------------------------------|
| Tv 061 | 1974 | 300 tons (fl) | $28.8 \times 6.3 \times$ |
| Tv 062 | 1975 | 140 tons (fl) | $12.0 \times 6.0 \times \dots$ |
| Tv 063 | 1974 | 250 tons (fl) | $28.8 \times 6.3 \times$ |
| Tv 064 | 1981 | | |
| Tv 065 | 410.0 | | |
| Tv 068 | 1979 | 400 tons (fl) | $30.6 \times 6.8 \times$ |
| Tv 069 | 1980 | 360 tons (fl) | $30.6 \times 6.7 \times \dots$ |
| | | | |



Tv 061 - oil barge

H. Ehlers, 4-85

Remarks: Tv 065 is a car ferry at Göteborg

• 4 Class H small craft (In serv. 1973-75)

Tv 031-Tv 034

D: 6 tons (fl) S: . . . Dim: 7.5 × 2.5 × . . .

- 1 Class J seasled (In serv. 1979): Tv 036—Dim: 11.8 × 4.6
- 20 miscellaneous Class K workboats (In serv. 1971-82)

Tv 080-Tv 099

D: 0.8 to 1.0 tons (fl) S: . . . Dim: 5.8 to 6.5 × 2.4 to 2.7 × . . .

SWITZERLAND

Swiss Confederation

Merchant Marine (1984): 32 ships — 319,348 grt (5 tankers — 10,065 grt)

SWISS ARMY

PATROL CRAFT

• 11 Patrouillenboat 80 class Bldr: Müller AG, Spiez (In serv. 1981-84)

Antares, Aquarius, Castor, Mars, Orion, Perseus, Pollux, Saturn, Sirius, Venus, Uranus

D: 5.9 tons (fl) **S**: 35 kts **Dim**: $10.7 \times 3.3 \times 0.9$ (0.6 hull)

A: 2/12.7-mm M3 mg (I × 2) Man: 6 tot.

M: 2 Volvo Penta AQ 260A gasoline engines; 2 props; 560 hp

Remarks: Glass-reinforced plastic construction, wooden superstructure. Replaced a group of wooden-hulled craft built in 1942.

SWITZERLAND (continued) PATROL CRAFT (continued)



P 80 class

SYRIA

Syrian Arab Republic

Personnel (1985): approximately 2,500 total

Merchant Marine (1985): 53 ships - 56,156 grt

NAVAL AVIATION: Helicopters: 3 Kamov Ka-25 Hormone-A ASW and 20 Mi-14 Haze-A ASW.

Note: Coast-defense batteries of SS C-1b Shaddock and SSC-3 Styx missiles have been transferred from the U.S.S.R. They are mounted on vehicles.

Two Romeo-class submarines delivered 1985; see U.S.S.R. section for characteristics.

FRIGATES

• 2 ex-Soviet Petya class

12 N. 14 N.



Syrian Petya No. 14

6th Flot., French Navy, 10-83

D: 950 tons (1,150 fl)
 S: 29 kts
 Dim: 81.8 (78.00 pp) × 9.2 × 2.97 (mean hull)
 A: 4/76.2-mm DP (II × 2) — 4/RBU 2500 ASW RL (XVI × 4) — 3/533-mm TT (III × 1) — 2/d.c. racks — mines

Electron Equipt: 1/Don-2, 1/Strut Curve, 1/Hawk Screech IFF: 2/Square Head, 1/High Pole B Sonar: Hull-mounted HF

M: CODAG: 2 gas turbines (15,000 hp each); 1 Type 61V3 diesel (6,000 hp); 3 props; 36,000 hp Range: 450/29; 4,800/10 Man: 8 officers, 84 men

Remarks: Transferred: 1975. Standard export version, with triple 533-mm TT substituted for Soviet Navy quintuple 400-mm mount.

CORVETTE

• 1 Soviet Natya class



Syria's Natya (transfer No. 642)

21st Flot., French Navy, 1-85

D: 650 tons (750 fl) S: 18 kts Dim: 61.0 × 9.8 × 3.0 A: 4/30-mm AK-230 AA (II × 2) — 4/25-mm AA (II × 2)

Electron Equipt: Radar: 1/Spin Trough nav., 1/Drum Tilt f.c.

IFF: 2/Square Head interrogators, 1/High Pole A transponder M: 2 diesels; 2 props; 5,000 hp Range: 1,800/16; 5,200/10 Man: 60 tot.

Remarks: Transferred 26-1-85. Not equipped with any of the normal Natya-class seagoing minesweeper mine countermeasures equipment, winches, cranes, etc., nor does she have the standard 2/RBU-1200 ASW rocket launchers or mine rails.

GUIDED-MISSILE PATROL BOATS

◆ 12 ex-Soviet Osa-II class



Syrian Osa-II

6th Flot., French Navy, 10-83

D: 215 tons (240 fl) S: 35 kts Dim: 38.6 × 7.6 × 2.0 A: 4/SS-N-2B Styx SSM (I × 4) − 4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole B

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25

Man: 28-30 tot.

Remarks: Two transferred 1978, four in 1979, two in 1982, two in 5-84, two in 1985.

• 6 ex-Soviet Osa-I class



Syrian Osa-I

6th Flot., French Navy, 10-83

D: 180 tons (215 fl) S: 36 kts Dim: 38.6 × 7.6 × 1.8 A: 4/SS-N-2 Styx (I × 4) — 4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole B

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34 Man: 28-30 tot.

Remarks: Transferred 1966; two were sunk during the Arab-Israeli War, October 1973.

Note: Six ex-Soviet Komar-class guided-missile patrol boats deleted due to age and lack of sightings. Eight P-4-class torpedo boats have also been deleted for similar reasons.

SYRIA (continued)

PATROL CRAFT

9 Soviet Zhuk class

D: 48 tons (60 fl) S: 34 kts Dim: 24.0 × 5.0 × 1.2 (1.8 props)

A: 4/14.5-mm mg (II × 2)

Electron Equipt: Radar: 1/Spin Trough

IFF: 1/High Pole A

M: 2 M50F-4 diesels; 2 props; 2,400 hp Fuel: 10 tons

Range: 700/28; 1,100/15 Man: 12 tot.

REMARKS: Three delivered 12-83, 3 in 12-84, three in 1-85.

MINE WARFARE UNITS

1 Soviet T-43-class fleet minesweeper

504 YARMOUK

D: 500 tons (570 fl) S: 14 kts Dim: 58.0 × 8.6 × 2.3 (hull) A: 4/37-mm AA (II × 2) -8/12.7-mm mg (II × 4) -2/d.c. mortars - mines

Electron Equipt: Radar: 1/Ball End M: 2 Type 9D diesels; 2 props; 2,200 hp Fuel: 70 tons Range: 2,000/14; 3,200/10 Man: 75 tot.

Remarks: Transferred 1962; one sister lost in the October 1973 war.

♦ 2 ex-Soviet Vanya-class coastal minesweepers

D: 210 tons (250 fl) S: 16 kts Dim: 40.2 × 7.9 × 1.7

A: 2/30-mm AA (II × 1) — mines Electron Equipt: Radar: 1/Don-2

M: 2 diesels; 2 props; 2,200 hp Range: 1,400/14; 2,400/10 Man: 30 tot.

Remarks: Transferred 12-72. Wooden construction; glass-reinforced plastic-sheathed hull.

2 Soviet Yevgenya class Bldr: Sredniy Neva SY, Kolpino

D: 80 tons (90 fl) S: 11 kts Dim: 26.2 × 6.1 × 1.5 A: 2/14.5-mm mg (II × 1) M: 2 diesels; 2 props; 600 hp

Electron Equipt: Radar: 1/Spin Trough - IFF: 1/High Pole B

Range: 300/10 Man: 10 tot.

Remarks: Transferred 2-85. Glass-reinforced plastic construction. Use television minehunting system to 30-m depths.

AMPHIBIOUS WARFARE SHIPS

2 Soviet Polnocny-B-class medium landing ships

D: 800 tons (fl) S: 18 kts Dim: 74.0 × 8.6 × 2.0

A: 4/30-mm AK-230 AA (II \times 2) — 2/140-mm barrage RL (XVIII \times 2) Electron Equipt: Radar: 1/Spin Trough, 1/Drum Tilt

IFF: 1/Square Head, 1/High Pole B

M: 2 diesels; 2 props; 5,000 hp Range: 900/18; 1,500/14

Man: 40 crew + 100 troops

REMARKS: Transferred from U.S.S.R. 15-1-84 and 2-85. Cargo: about 180 tons. May also have 2 or 4/SA-N-5 point-defense SAM stations (IV × 2 or 4).

AUXILIARIES AND SERVICE CRAFT

◆ 1 Soviet Sekstan-class degaussing tender (In serv. 1949-55)

D: 400 tons (fl) S: 11 kts Dim: 41.0 × 9.3 × 4.2

M: 1 diesel; 1 prop; 400 hp Range: 1,200/10.5 Man: 24 tot.

Remarks: Transferred 12-83. Wooden construction.

♦ 1 Soviet Nyrvat-1-class diving tender

D: 120 tons (fl) S: 12 kts Dim: 29.0 × 5.0 × 1.7

Electron Equipt: Radar: 1/Spin Trough M: 1 diesel; 1 prop; 450 hp

Range: 1,600/10 Man: 15 tot.

Bldr: ARCOR, La Teste, France (In serv. 1985) 3 survey launches

D: . . . S: 25 kts Dim: 9.80 (8.50 pp) × 3.40 × 0.90

M: 2 Volvo-Penta AQAD-40 diesels; 310 hp Range: 300/. . .

Man: 4 tot.

Remarks: Ordered 12-84, Glass-reinforced plastic construction.

TAIWAN

Republic of China

Personnel (1985): 38,000 total Navy, plus 39,000 Marines; 45,000 naval reservists, 35,000 Marine reservists

Merchant Marine (1984): 543 ships - 3,958,418 grt (tankers: 31 ships - 1,467,344 grt) NAVAL AVIATION: Eighteen S-2A/E, including 9 ex-U.S.N. delivered late 1985. Twelve Hughes-500 MD/ASW helicopters with ASQ-81(V)2 magnetic anomaly detection (MAD) gear were ordered during 1979 for use from destroyers. The Marines have several light observation aircraft and helicopters.

Warships In Service Or Under Construction As Of 1 January 1986

| | L | Tons (Surfaced) | Main Armament |
|--------------------------------|---------|--------------------|---|
| ♦ 2 (+2) submarines | | | |
| 0 (+2) Zwaardvis 2 GUPPY II | 1944-45 | 2,300 1,870 | 6/533-mm TT 10/533-mm TT |
| ♦ 26 destroyers | | Tons | |
| 12 Gearing FRAM-I | 1945-46 | 2,425 | 4/127mm, 0-4/40-mm ASW weapons |
| 2 Gearing FRAM-II | 1945 | 2,425 | 4-6/127-mm, 4-8/40-mm, ASW weapons |
| 2 ALLEN M. SUMNER FRAM-II | 1944 | 2,350 | 4 or 6/127-mm, SSM, ASW weapons |
| 6 Allen M. Sumner | 1943-44 | 2,200 | 4 or 6/127-mm, SSM, ASW weapons |
| 4 Fletcher | 1942-43 | 1,680 | 4-5/127-mm, Sea Chapparal SAM, ASW weapons |
| ◆ 10 frigates | | | |
| 1 Rudderow | 1943 | 1,450 | 2/127-mm, 4/40-mm, ASW weapons |
| 9 Crosley/Charles | | | 1/4 |
| LAWRENCE | 1943-45 | 1,680 | 2/127-mm, 6/40-mm, ASW weapons |
| ♦ 3 corvettes | | | |
| 3 Аик | 1942-45 | 890 | 2/76.2-mm, 4/40-mm, ASW weapons |

50 guided-missile patrol boats

13 minesweepers

♦ 50 amphibious ships and craft

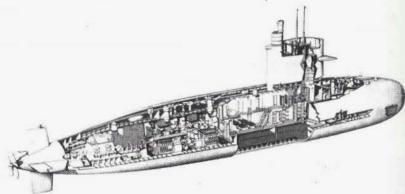
Note: Almost all ships, weapons, and electronics systems currently in use originated in the United States, the principal exception being the Hsiung Feng anti-ship missile, a copy of the Israeli Aviation Industries' Gabriel II. Although nearly all ships are ex-U.S. Navy units dating to World War II, maintenance has been superb, and many subsystems have been renewed and updated. At the present time, destroyer gunfirecontrol systems are being upgraded by U.S. contractors, while a locally designed chaff rocket system has been installed on most larger ships. Hull numbers were altered in 1976 and now are not usually worn. The latest known numbers are given, but ships are listed in alphabetical order.

SUBMARINES

♦ 0 (+2) modified Dutch Zwaardvis class

Bldr: Wilton Fijenoord, Schiedam

| | Laid down | L | In serv. |
|-------|-----------|---|----------|
| N | 12-82 | | 1986 |
| N | | | 1986 |



"Sea Dragon" class

D: 2,300 tons surf./2,600 sub. S: 11 kts Dim: 66.92 × 8.40 × 6.70

A: 6/533-mm TT fwd (28 torpedoes)

Electron Equipt: Radar: 1/Decca . . -EW: H.S.A. RAPIDS

Sonar: Thomson-CSF Octopus

M: 3 Brons/Stork-Werkspoor 12 ORUB 215 diesels (1,350 hp each); 2/992-kw generator groups, 1 3,800-kw motor; 1 5-bladed prop; 5,100 hp

Fuel: 310 tons Range: 10,000/9 (surf.) Man: 8 officers, 59 men

REMARKS: Ordered late 1980, over mainland China's protests. Design also referred to as "Sea Dragon" class. Highly automated design. "Gipsy" data system, Sperry Mk 29

SUBMARINES (continued)

Mod. 2A inertial navigation system. Two 196-cell batteries. Program delayed by shipyard financial problems. Request for 2 more (and option for 5th and 6th) turned down by Dutch government in 1984, due to Chinese pressure.

♦ 2 ex-U.S. GUPPY II class

| | Bldr | Laid down | L | In serv. |
|--|------------------------|-----------|---------|----------|
| 736 Hai Shih | Portsmouth, NSY | 22-7-44 | 5-11-44 | 17-3-45 |
| (ex-Cutlass, SS 478) 794 Hai Pao (ex-Tusk, SS 426) | Cramp SB, Philadelphia | 23-8-43 | 8-7-45 | 11-4-46 |



Hai Pao (794) - as Tusk

D: 1,517/1,870/2,440 tons S: 18/16 kts Dim: 93.57 × 8.33 × 5.18 A: 10/533-mm TT (6 fwd, 4 aft)

Electron Equipt: Radar: 1/SS-2

Sonar: BQR-2B, BQS-4C, DUUG-1B

M: Diesel-electric propulsion: 4 Fairbanks-Morse 38D8% diesels; 2 electric motors; 4,610/5,200 hp

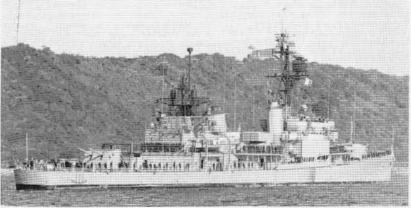
Range: 10,000/10 surfaced Man: 11 officers, 70 men

Remarks: Transferred 12-4-73 and 18-10-73, for ASW training. Four 126-cell batteries. Source of torpedoes uncertain: may use old Japanese or U.S. Mk 14 World War II-era straight-runners, U.S. Mk 37 or NT-37C homing torpedoes, or U.K. Mk 24 Tigerfish; tubes were welded shut at time of delivery.

DESTROYERS

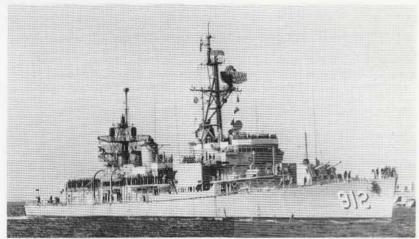
♦ 12 ex-U.S. Gearing FRAM-I class

| | Bldr | Laid down | L | In serv. |
|---|--------------------------------------|-----------|----------|----------|
| 912 Chao Yang (ex-Hammer, DD 718) | Federal SB Newark, N.J. | 5-4-45 | 24-11-45 | 11-7-46 |
| 928 Cheng Hua (ex-Hollister, D 788) | Todd Pacific SY, Seattle | 18-1-45 | 9-10-45 | 29-3-46 |
| 921 CHIEN YANG (ex-James E. Kyes, DD 787) | Todd Pacific SY, Seattle | 27-12-44 | 4-8-45 | 8-2-46 |
| 978 Han Yang ex-Herbert J. Thomas, DD 833) | Bath Iron Wks | 30-10-44 | 25-3-45 | 29-5-45 |
| 915 KAI YANG ex-Richard B. Anderson, DD 786 | Todd Pacific SY, Seattle | 1-12-44 | 7-7-45 | 26-10-45 |
| 981 Lat Yang (ex-Leonard F. Mason, DD 852) | Bethlehem Steel, Quincy | 8-6-45 | 4-1-46 | 28-6-46 |
| 928 Lao Yang (ex-Shelton, DD 790) | Todd Pacific SY, Seattle | 31-5-45 | 8-3-46 | 21-6-46 |
| 938 Liao Yang (ex-Hanson, DD 832) | Bath Iron Wks | 7-10-44 | 11-3-45 | 11-5-45 |
| 926 Shao Yang (ex-Hawkins, DD 873) | Consolidated, Steel, Orange, Tex. | 14-5-44 | 7-10-44 | 10-2-45 |
| 932 Shen Yang (ex-Power, DD 839) | Bath Iron Wks | 26-2-45 | 30-6-45 | 13-9-45 |
| 925 TE YANG (ex-Sarsfield, DD 837) | Bath Iron Wks | 15-1-45 | 27-5-45 | 31-7-45 |
| 927 Yung Yang (ex-Johnston, DD 821) | Consolidated Steel, Orange, Tex. | 6-5-45 | 19-10-45 | 10-10-46 |



Liao Yang (wearing 921)

L. & L. Van Ginderen, 7-85



Chien Yang wearing 912 - note TACAN atop aft mast, chaff RL abaft second stack L. & L. Van Ginderen, 7-85

D: 2,425 tons (3,465-3,540 fl) S: 32 kts

Dim: 119.03 (116.74 wl) × 12.52 × 4.61 (6.5 over sonar)

A: 4/127-mm DP (II \times 2) — Han Yang, Kai Yang: 4/40-mm AA (II \times 2); Chao Yang and Yung Yang: 2/40-mm AA (I \times 2) — all: 4 or 6/12.7-mm mg — 1/ASROC ASW RL (VIII × 1) (not in Han Yang, Kai Yang, Chao Yang)-6/324-mm Mk 32 ASW TT (III × 2) - 1/Hughes-500 MD ASW helicopter Electron Equipt: Radar: 1/SPS-10, 1/SPS-29 (Chien Yang, Te Yang, Shao

Yang, Cheng Hua: SPS-40), 1/Mk 25 Sonar: SQS-23 — TACAN: SRN-15

EW: WLR-1, ULQ-6 in some, 4/chaff RL (XVI × 4)

M: 2 sets G.E. GT; 2 props; 60,000 hp Electric: 1,200 kw Boilers: 4 Babcock & Wilcox; 43.3 kg/cm2, 454°C

Fuel: 720 tons Range: 1,500/31; 5,800/12 Man: 275 tot.

Remarks: Chien Yang, Lao Yang, and Liao Yang transferred 18-4-73; Han Yang, 6-5-74; Kai Yang, 10-6-77; Te Yang, Shen Yang, 1-10-77; Lai Yang, 10-3-78. A ninth unit, Chao Yang (ex-Rowan, DD 782) was lost 22-8-77 while on tow to Taiwan. Ex-DD 718 and 821 purchased (without ASROC) 27-2-81; ex-DD 788 purchased 3-4-83, ex-DD 873 purchased 17-4-83. Kai Yang and Lao Yang both have 127-mm twin mounts forward and the Mk 32 ASW torpedo tubes abreast the after stack. Han Yang has extra superstructure, as she was converted for NBC-warfare defense trials 1963-64; she has an extra gas-turbine generator to run additional air-conditioning systems. She and Kai Yang had no ASROC on transfer and have received two twin 40-mm antiaircraft guns, each with a Mk 51, Mod. 2 director in the ASROC location. In Chao Yang and Yung Yang, two single Bofors L70, 40-mm AA are mounted on the former ASROC deck. All have Mk 37 gunfire-control radars for the 127-mm guns. New GFCS are to be acquired for all. Hsiung Feng (Israeli Gabriel I) missiles have been added to Han Yang and possibly others, in a triple, trainable launcher in lieu of the after 127-mm mount, and most have four multi-tube chaff RL.

♦ 2 ex-U.S. Gearing FRAM-II class

| | Bldr | Laid down | L | In serv. |
|----------------------------|------------------|-----------|---------|----------|
| 966 Dang Yang | Bethlehem Steel, | 26-3-44 | 5-10-45 | 21-3-47 |
| (ex-Lloyd Thomas, DD 764) | San Francisco | | | |
| 907 Fu Yang | Bath Iron Works | 30-1-45 | 14-6-45 | 21-8-45 |
| (ov Fraget G Small DD 838) | | | | |



Fu Yang (907) - now has triple Hsiung Feng launcher aft

1977

D: 2,425 tons (3,477 fl) S: 32 kts

Dim: 119.03 (116.74 wl) \times 12.52 \times 4.61 (6.54 over sonar) A: 907: 5/Hsiung Feng SSM (III \times 1, I \times 2) - 4/127-mm DP (II \times 2) - 8/40-mm AA (II \times 4) -4/12.7-mm mg (I \times 4) -2/Mk 11 Hedgehog -6/324-mm Mk 32 ASW TT (III × 2) -1/d.c. rack

966: 4/127-mm DP (II × 2) - 4/40-mm AA (II × 2) - 4/12.7-mm mg

 $(I \times 4) - 1/Mk$ 15 trainable Hedgehog -6/324-mm Mk 32 ASW TT $(III \times 2)$ -1/Hughes-500 ASW helicopter

Electron Equipt: Radar: 907: 1/SPS-58, 1/SPS-37, 2/RCA HR 76

TACAN: URN-6 EW: Argo AR 680/681

966: 1/SPS-10, 1/SPS-6B, 1/Mk 25

EW: WLR-1, WLR-3, ULQ-6

Sonar: SQS-23 series (hull)

DESTROYERS (continued)

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm2, 454°C Fuel: 720 tons Range: 1,600/31; 6,100/12 Man: 275 tot.

REMARKS: Dang Yang, completed as an ASW destroyer (DDE), finished FRAM-I modernization in 11-61 and was transferred to Taiwan on 12-10-72. Fu Yang, transferred in 2-71, completed FRAM-II modernization as a radar picket destroyer in 8-61; her SPS-30 height-finder was removed before transfer. Both received 40-mm and 12.7-mm guns in Taiwan. One Mk 37 radar gunfire control for 127-mm, one Mk 51, Mod. 2, optical gunfire control per 40-mm mount. Fu Yung acts as fleet flagship and has been modernized like the units below.

◆ 2 ex-U.S. Allen M. Sumner FRAM-II class

Bldr Laid down L In serv. 30-8-43 25-1-44 20-5-44 Bethlehem Steel, 949 Lo Yang (ex-Taussig, DD 746) Staten I. 954 NAN YANG Bethlehem Steel, 21-11-43 30-9-44 11-10-45 (ex-John W. Thomason, DD 760) San Francisco



Lo Yang or Nan Yang

Defense Technology, 1985

D: 2,350 tons (3,220 fl) S: 33 kts Range: 1,000/32 Man: 275 tot.

Dim: 114.63 (112.52 wl) × 12.52 × 4.4 (5.9 over sonar)

A: 5/Hsiung Feng SSM (III \times 1, I \times 2) - 1/RIM-72C Sea Chaparral point-defense SAM system (VI \times 1) - 2/127-mm DP (II \times 1) - 1/76-mm OTO Melara Compact DP -2/40-mm Bofors AA (I \times 2) -4/12.7-mm mg $(I \times 4) - 2/Mk$ 11 Hedgehog ASW mortars $(XXIV \times 2) - 6/324$ -mm Mk 32 ASW TT (III × 2) - 1/Hughes 500 helicopter

Electron Equipt: Radar: 1/SPS-58, 1/SPS-29, 2 RCA HR-76

Sonar: SQS-29 series

EW: Argo AR 680/681, 4 chaff RL-TACAN: SRN-15

M: 2 sets GT; 2 props; 60,000 hp Electric: 1,200 kw Boilers: 4 Babcock & Wilcox; 43.3 kg/cm², 454°C Fuel: 500 tons

Remarks: Both transferred on 6-5-74, having completed FRAM-II modernization in 9-62 and 1-60, respectively. Rebuilt by mid-1985 with "B" 127-mm mount replaced by 76-mm gun, aft 127-mm mount by triple, trainable SSM launcher. The manned Sea Chaparral launcher is at the extreme stern. The Honeywell H930 weapon-control system is supported by two RCA radars mounted on new lattice masts; the old Mk 37 GFCS director is retained without its Mk 25 radar, but with a Kollmorgen electro-optical system added. A similar conversion is probably being effected on some of the larger Gearing-class units.

♦ 6 ex-U.S. Allen M. Sumner class

| Bldr | Laid down | L | In serv. |
|------------------|--|--|---|
| Bethlehem Steel, | 30-9-43 | 23-2-44 | 24-6-44 |
| Staten Isl. | | | |
| Bethlehem Steel, | 30-7-43 | 28-12-43 | 17-4-44 |
| Staten Isl. | | | |
| Bethlehem Steel, | 5-5-44 | 29-10-44 | 17-3-45 |
| San Pedro | | | |
| Federal SB, | 19-10-43 | 27-2-44 | 4-5-44 |
| Kearny, N.J. | | | |
| Bath Iron Works | 28-10-43 | 19-3-44 | 2-6-44 |
| | | | |
| Federal SB, | 16-12-43 | 15-4-44 | 22-6-44 |
| Kearny, N.J. | | | |
| | Bethlehem Steel, Staten Isl. Bethlehem Steel, Staten Isl. Bethlehem Steel, San Pedro Federal SB, Kearny, N.J. Bath Iron Works Federal SB, | Bethlehem Steel, Staten Isl. Bethlehem Steel, Staten Isl. Bethlehem Steel, Staten Isl. Bethlehem Steel, 5-5-44 San Pedro Federal SB, 19-10-43 Kearny, N.J. Bath Iron Works 28-10-43 Federal SB, 16-12-43 | Bethlehem Steel, 30-9-43 23-2-44 Staten Isl. Bethlehem Steel, 30-7-43 28-12-43 Staten Isl. Bethlehem Steel, 5-5-44 29-10-44 San Pedro Federal SB, 19-10-43 27-2-44 Kearny, N.J. Bath Iron Works 28-10-43 19-3-44 Federal SB, 16-12-43 15-4-44 |

D: 2,200 tons (3,300 fl) S: 33 kts M: 2 sets GT; 2 props; 60,000 hp Dim: 114.63 (112.52 wl) × 12.52 × 4.4 (5.9 over sonar) Electric: 1,000 kw A: Hsiang Yang, Hua Yang, Yuen Yang: 5/Hsiung Feng SSM (III × 1, I × 2) -6/127-mm DP (II × 3) - 4/40-mm AA (II × 2) - 4/12.7-mm mg (I × 4) -2/Mk 11 Hedgehogs — 6/324-mm Mk 32 ASW TT (III \times 2) — 1/d.c. rack Heng Yang: 6/Hsiung Feng SSM (III × 2) -4/127-mm DP (II × 2) 8/40-mm AA (IV \times 1, II \times 2) -4/12.7-mm mg (I \times 4) -2/Mk 11 Hedgehogs -6/324-mm Mk 32 ASW TT (III × 2) - 1/d.c. rack Huei Yang, Po Yang: 6/127-mm DP (II × 3) -4/76.2-mm DP (II × 2) -4/12.7-mm mg-2/Mk 11 Hedgehogs-6/324-mm Mk 32 ASW TT-1/d.c.

Electron Equipt: Radar: 1/SPS-10, 1/SPS-6C (Po Yang: SPS-40), 1/Mk 25 (Huei Yang, Po Yang: 1/Mk 35 also), Hsiung Feng ships: 1/Orion RTN-10X

Sonar: SQS-29 series EW: WLR-1, 4/chaff RL (XVI \times 4)

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm², 454°C

Fuel: 500 tons Range: 1,000/32; 4,400/11 Man: 275 tot.

REMARKS: Heng Yang transferred in 2-70; Hsiang Yang and Hua Yang on 9-12-69; Huei Yang in 9-70; Po Yang on 6-7-72; Yuen Yang on 12-5-70. All were unmodified units of the class. Hsiang Yang had four 76.2-mm DP before Hsuing Feng conversion. Those that have 40-mm antiaircraft guns had them added in Taiwan; each mount has one associated Mk 51, Mod. 2 GFCS. All have Mk 37 radar GFCS for the 127-mm guns: those with 76.2-mm also have one Mk 56 radar GFCS. The Hsiung Feng-equipped units have a Selenia Orion RTN-10X fire-control radar on the after side of the tripod

♦ 4 ex-U.S. Fletcher class

Bldrs: An Yang: Bethlehem Steel, Staten Island; others: Bethlehem, San Francisco

| | Laid down | L | In serv. |
|--------------------------------------|-----------|----------|----------|
| 997 An Yang (ex-Kimberly, DD 521) | 27-7-42 | 4-2-43 | 24-5-43 |
| 947 CHIANG YANG (ex-Mullany, DD 528) | 15-1-42 | 12-10-42 | 23-4-43 |
| 934 Kun Yang (ex-Yarnell, DD 541) | 5-12-42 | 25-7-43 | 30-12-43 |
| 908 Kwei Yang (ex-Twining, DD 540) | 21-11-42 | 11-7-43 | 1-2-43 |



Kwei Yang (908) - alongside Lao Yang (928)

Defense Technology, 1985

D: 2,100 tons (3.036 fl) S: 35 kts Range: 860/35; 4,700/13 Man: 275 tot. Dim: 114.65 (112.52 wl) × 11.99 × 4.39 (5.38 over sonar)

A: 5/Hsiung Feng SSM (III \times 1, I \times 2) -2/127-mm DP (I \times 2) -1/76-mm OTO Melara DP-1/RIM-72C Sea Chaparral SAM system (VI × 1)-6/324-mm Mk 32 ASW TT (III × 2) - 2/Mk 11 Hedgehogs - 1/d.c. rack (934 also: 2 mine rails)

Electron Equipt: Radar: 1/SPS-58, 1/SPS-6C, 2/R.C.A. R76C5 Sonar: DD 934, 997: SQS-50; DD 947: SQS-40, DD 956: SQS-41 EW: Argo AR 680/681, 4/chaff RL (XVI × 4)

M: 2 sets GT; 2 props; 60,000 hp Electric: 880 kw Boilers: 4 Babcock & Wilcox; 43.3 kg/cm², 454°C Fuel: 512 tons

Remarks: An Yang transferred in 6-67; Chiang Yang in 10-71; Kun Yang in 6-68; Kwei Yang in 10-71. Sea Chaparral is a manned mounting for launching Redeye, heat-seeking, short-range SAMs; it replaced a twin 40-mm antiaircraft mount. SQS-50 is an updated SQS-4; SQS-40 and -41 are updated versions of the SQS-29 and -30. All four have now been modernized with new fire-control systems, two 4-legged lattice masts, and greatly enlarged forward superstructures.

FRIGATES

Note: A 3,348-ton, CODOG-powered frigate design prepared for Taiwan by Westinghouse in the U.S. proved too expensive to construct in the numbers necessary to replace Taiwan's aged fleet. Further studies for a more economical design are ongoing.

• 1 ex-U.S. Rudderow class Bldr: Bethlehem Steel, Hingham, Mass.

Laid down T. In serv. 959 Tai Yuan (ex-Riley, DE 579) 20-10-43 29-12-43 13-3-44

D: 1,450 tons (1,950 fl) S: 24 kts Dim: 93.27 × 11.24 × 3.43 (4.3 over sonar) A: 2/12.7-mm DP (I × 2) -4/40-mm AA (I × 2) -4/20-mm AA (I × 4) -1/Mk11 Hedgehog-6/324-mm Mk 32 ASW TT (III × 2) - 2/Mk 9 d.c. racksmines

Electron Equipt: Radar: 1/SPS-5, 1/SPS-6, 1/Mk 26 fire-control Sonar:

M: 2 sets G.E. turbo-electric drive; 2 props; 12,000 hp Electric: 1,140 kw Boilers: 2 Foster-Wheeler D-type; 31.7 kg/cm², 399°C Fuel: 354 tons Range: 1,100/24; 5,000/12 Man: 200 tot.

Remarks: Transferred, after modernization, on 10-7-69; purchased outright in 3-74. Has one Mk 52 radar GFCS and two Mk 51, Mod. 2, GFCS. Minelaying capability added in Taiwan.

9 former high-speed transports

6 ex-U.S. Crosley class:

| ************************************** | Bldr | Laid down | L | In serv. |
|--|------------------|-----------|---------|----------|
| 838 Fu Shan | Charleston NY, | 13-12-43 | 9-3-44 | 3-7-44 |
| (ex-Truxtun, APD 98, | Charleston, S.C. | | | |
| ex-DE 282) | * | | | |
| 854 Hua Shan | Defoe SB, | 17-4-44 | 22-7-44 | 13-4-45 |
| (ex-Donald W. Wolf, | Bay City, Mich. | | | |
| APD 129, ex-DE 713) | | | | |

| FRIGATES (continued) | | | | |
|---|--|----------------------|--------------|---------------------|
| 893 Shou Shan (ex-Kline, APD 120, ex-DE 687) | Bethlehem Steel, Quincy, Mass. | 27-5-44 | 27-6-44 | 18-10-44 |
| 878 TAI SHAN (ex-Register, APD 92, ex-DE 233) | Charleston NY, Charleston, S.C. | 27-10-43 | 20-1-44 | 11-1-45 |
| 615 TIEN SHAN (ex-Kleinsmith, APD 134, ex-DE 718) | Defoe SB, Bay City, Mich. | 30-8-44 | 27-1-45 | 12-6-45 |
| 826 Yu Shan (ex-Kinzer, APD 91, ex-DE 232) | Charleston NY, Charleston, S.C. | 9-9-43 | 9-12-43 | 1-11-44 |
| 3 ex-U.S. Charles Lawrence | class | | | |
| 845 Chung Shan (ex-Blessman, APD 48, ex-DE 69) | Bldr Bethlehem Steel, Hingham, Mass. | Laid down 23-3-43 | L 19-6-43 | In serv. 19-9-43 |
| 821 Lu Shan (ex-Bull, | Defoe SB, | 14-12-42 | 25-3-43 | 12-8-43 |
| APD 78, ex-DE 693) 834 Wen Shan (ex- Gantner, APD 42, ex-DE 60) | Bay City Bethlehem Steel, Hingham, Mass. | 21-12-42 | 17-4-43 | 23-7-43 |
| | | | | |



Fu Shan (838) - wearing old number

Ships of the World, 1975

D: 1,680 tons (2,150 ft) S: 22 kts Dim: 93.27 × 11.24 × 3.96 (hull)

A: 2/127-mm DP (I \times 2) — 6/40-mm AA (II \times 3) — 4/20-mm AA (I \times 4) — 2/Mk 9 d.c. racks—see also Remarks

Electron Equipt: Radar: 1/SPS-5, 1/Decca 707; some: 1/Mk 26 Sonar: . . .

M: 2 sets G.E. turbo-electric drive; 2 props; 12,000 hp Electric: 1,140 kw Boilers: 2 Babcock & Wilcox, Foster-Wheeler, or Combustion Engineering; 31.7 kg/cm², 399°C

Fuel: 346 tons Range: 1,800/22; 5,000/13 Man: 200 crew + 160 troops

Remarks: Yu Shan transferred in 4-62; Hua Shan in 5-65; Fu Shan and Shou Shan in 3-66; Wen Shan in 5-66; Lu Shan in 8-66; Tai Shan in 10-66; Tien Shan in 6-67, and Chung Shan in 8-67. All were sold outright except Tien Shan which, because she was on loan, was not modified by the addition of a second 127-mm mount aft until after her purchase in 1974; the others all received the second gun in lieu of a cargo hold and derrick, beginning about 1970. ASW armaments vary, with Fu Shan having two Mk 11 Hedgehogs on her main deck forward and several (but not all) carrying six 324-mm Mk 32 ASW torpedo tubes (III × 2); all have two Mk 9 depth-charge racks, and Hua Shan has four twin 20-mm antiaircraft guns. Most have only a Mk 51 range finder for 127-mm fire-control forward and a Mk 51 optical gunfire-control system aft, plus three Mk 51, Mod. 2 GFCS for the 40-mm antiaircraft guns. Welin davits are retained amidships, but only two (vice the original four) landing craft are carried, to save topweight. The former Crosley-class ships have low navigating bridges, the other ships have high ones. Sisters Heng Shan (ex-Raymond W. Herndon, APD 121) and Lung Shan (ex-Schmitt, APD 76) were stricken in 1976, and Kang Shan (ex-George W. Ingram, APD 43) was stricken in 1978.

CORVETTES

* 3 ex-U.S. Auk-class former minesweepers

| | Laid down | L | In serv. |
|-------------------------------------|-----------|----------|----------|
| 896 CHU YUNG (ex-Waxwing, MSF 389) | 24-5-44 | 10-3-45 | 6-8-45 |
| 867 Ping Jin (ex-Steady, MSF 118) | 17-11-41 | 6-6-42 | 16-11-42 |
| 884 Wu Sheng (ex-Redstart, MSF 378) | 14-6-44 | 18-10-45 | 4-4-45 |

Bldrs: Wu Sheng: Savannah Machine & Foundry, Ga; others: American SB, Cleveland, O.

D: 890 tons (1,250 fl) S: 18 kts Dim: 67.39 (65.53 pp) × 9.8 × 3.3

A: 2/76.2-mm DP (I \times 2) — 4/40-mm AA (II \times 2) — 4/20-mm AA (II \times 2) — 1/Mk 11 Hedgehog — 3/324-mm Mk 32 ASW TT (III \times 1) — 2/Mk 9 d.c. racks

Electron Equipt: Radar: 1/SPS-5 Sonar: SQS-17

M: 2 G.M. 12-278A diesels; 2 props; 3,532 hp

Electric: 360 kw Fuel: 216 tons Man: 80 tot.

Remarks: After conversion to corvettes, transferred as follows: Chu Yung in 11-65, Ping Jin in 3-68, and Wu Sheng in 7-65. Chu Yung was fitted with mine rails in 1975.

GUIDED-MISSILE PATROL BOATS

Note: Unconfirmed reports in mid-1985 indicated that a South African "Minister" (Israeli Sa'ar IV)-class guided-missile patrol boat had been transferred to Taiwan. Negotiations in 1984 to purchase former U.S. Navy Asheville-class patrol boats Asheville (PG 84), Marathon (PG 89), and Ready (PG 87) from the Massachusetts Maritime Academy fell through, but decommissioned sisters Gallup (PG 85) and Cannon (PG 90) may still be transferred from the U.S. government.

♦ 50 Hai Ou class Bldr: China SB, Kaohsiung (In serv. 1980-. . .)



Hai Ou class

D: 47 tons (fl) S: 36 kts Dim: 21.62 × 5.49 × 0.94 (1.82 props)

A: 2/Hsiung Feng SSM (I × 2) — 2/12.7-mm mg (I × 2) Electric: 30 kw

Electron Equipt: Radar: 1/. . . nav., 1/RCA R76 Man: 10-12 tot.

M: 2 MTU 12V331 TC81 diesels; 2 props; 2,720 hp Range: 700/32

Remarks: Design evidently based closely on the Israeli Dvora class; name means "Seagull." Have Kollmorgen Mk 35 optical sight, four AV-2 chaff RL $(I \times 4)$.

◆ 2 Lung Chiang class and 1 (+5+...) Suikiang class

| 581 LUNG CHIANG Tacoma Boatbldg, Tacoma, Wash. 15 582 N China SB, Kaohsiung 583 SUIKIANG China SB, Kaohsiung | 5-78 |
|--|------|
| (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) | |
| 583 SURIANG China SB Kaohsiung | 1979 |
| | 1982 |
| 584 N China SB, Kaohsiung | 1985 |



First Taiwan-built Lung Chiang on trials - not yet armed

Tacoma, 1978

D: 218 tons (250 fl) **S:** 40 kts **Dim:** 50.14 (46.94 pp) \times 7.60 \times 2.26

A: 4/Hsiung Feng SSM — 1/76-mm OTO Melara DP — 2/30-mm Emerlec AA (II \times 1) — 2/12.7-mm mg (I \times 2)

Electron Equipt: Radar: I navigational 1/RAN 11LX (NA 10 system) (583; see remarks) — EW: 4 AV-2 chaff RL (I \times 4)

M: CODOG: 3 G.M. 12V149 TI diesels (3,600 hp), 3 AVCO-Lycoming TF-40A gas turbines; 3 CP props; 15,000 hp

Range: 700/40 (gas turbines), 1,900/30 (3 diesels); 2,700/12 (1 diesel) Man: 5 officers, 30 men

Remarks: Design is a variation of Tacoma Boatbuilding (U.S.) PSMM Mk-5 design. The Hsiung Feng missile is a copy of the Israeli Gabriel I. Prototype built in Korea, with follow-on units to be built in Taiwan. Third unit is of revised design, hence new class name; at least 6 are to be built, with the RCA R76C5 fire-control system.

PATROL CRAFT

◆ 2 (+20-24) Vosper design Bldr: Vosper Pty, Singapore (In serv. 1985)

Remarks: Prototypes for a cooperative construction program, with the remainder (if built) to be constructed in Taiwan. No data available, except 21 m oa, 40 kts from 2 Stewart & Stevenson 16V92 MTAB diesels, 2,430 hp; A: 1/20-mm AA, 2 mg.

◆ 10 or more aluminum-hulled Bldr: China SB, Kaohsiung

D: 12 tons S: 25 kts Dim: 15.0 × . . . × . . . A: 1/40-mm AA M: 2 diesels; water-jet drive

REMARKS: Date from 1971. There are believed to be a number of other small patrol craft of Taiwanese construction, for which no details are available.

MINE WARFARE SHIPS

Note: New mine countermeasures ships are badly needed to replace the following ships, which have considerably deteriorated. Negotiations with Van der Giessen de Noord in

MINE WARFARE SHIPS (continued)

the Netherlands during 1983-84 for six Alkmaar ("Tripartite")-class minehunters fell through. Recent reports indicate the possible ordering of two minehunters of the same type ordered by Thailand from Lürssen, Vegesack, West Germany; the ships would have a Krupp-Atlas sonar and carry Gaymarine "Pluto" minehunting, remote-controlled submersibles.

13 ex-U.S. and ex-Belgian Adjutant, MSC 268*, and MCS 289** classes of coastal minesweepers

| | Bldr | In serv. |
|---------------------------------------|----------------------------|----------|
| Yung An (ex-MSC 123) | | 6-55 |
| Yung Chen (ex-Maaseick, ex-MSC 78) | Adams Yacht, Quincy, Mass. | 7-53 |
| Yung Chi (ex-Charleroi, ex-MSC 152) | Hodgdon Bros., Me. | 2-54 |
| Yung Ching (ex-Eakloo, ex-MSC 101) | Hodgdon Bros., Me. | 5-53 |
| Yung Chou (ex-MSC 278)* | Tacoma Boat, Wash. | 7-59 |
| Yung Fu (ex-Diest, ex-Macaw, MSC 77) | Adams Yacht, Quincy, Mass. | 5-53 |
| Yung Hsin (ex-MSC 302)** | Dorchester Bldrs., N.J. | 3-65 |
| Yung Jen (ex-St. Nicholas, ex-MSC 64) | H. B. Nevins, N.Y. | 2-54 |
| Yung Ju (ex-MSC 300)** | Tacoma Boat, Wash. | 3-65 |
| Yung Lo (ex-MSC 306)** | Dorchester Bldrs., N.J. | 4-66 |
| Yung Nien (ex-MSC 277)* | Tacoma Boat, Wash. | 5-59 |
| Yung Shan (ex-Lier, ex-MSC 63) | H. G. Nevins, N.Y. | 7-53 |
| Yung Sui (ex-Diksmude, ex-MSC 65) | H. B. Nevins, N.Y. | 2-54 |



Yung Chi - Adjutant class, ex-Belgian, wearing old number

1970



Yung Chou - MSC 268 class, wearing old number

1970



Yung Lo-MSC 289 class, wearing old number

1970

D: 320 tons (378 fl) **S:** 12.5 kts **Dim:** 43.0 (41.5 wl) \times 7.95 \times 2.55

A: 2/20-mm AA (II × 1)

Electron Equipt: Radar: 1/Decca 45 or 707

Sonar: UQS-1D

M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp (MSC 268 class; 4 G.M. 6-71 diesels; 2 props; 890 hp)

Fuel: 40 tons Range: 2,500/12 Man: 40 tot.

Remarks: Wooden hulls. All transferred on completion except ex-Belgian ships, transferred in 11-69. Have a variety of configurations, the ex-MSC 258 having a different propulsion scheme and the ex-MSC 289 class having a lower bridge and taller stack. Sister Yung Ping (ex-MSC 140) stricken 1982; several others soon to follow.

♦ 1 ex-U.S. minesweeping boat

MSB 12 (ex-U.S. Navy MSB 4, ex-U.S. Army . . .)

D: 39 tons (fl)
 S: 12 kts
 Dim: 17.5 × 4.6 × 1.25
 M: 2 Packard diesels; 2 props; 600 hp
 Man: 6 tot.

Remarks: Built in 1945 and transferred in 12-61. Wooden hull. Sister to South Korean MSB 1.

• 8 ex-U.S. minesweeping launches

MSML 1 MSML 3 MSML 5 MSML 6 MSML 7 MSML 8 MSML 11 MSML 12

D: 24 tons (fl) S: 8 kts Dim: 15.29 × 3.96 × 1.31 M: 1 diesel; 1 prop, 60 hp Range: 800/8 Man: 4 tot.

Remarks: Built between 1943 and 1945, and converted from personnel launches before transfer in 3-61. Wooden hulls.

AMPHIBIOUS WARFARE SHIPS

♦ 1 command ship Bldr: Dravo Corp., Neville I., Pittsburgh, Pa.

663 Kao Hsiung (ex-Chung Hai, LST 229, 11-3-44 26-4-44 ex-Dukes County, LST 735)



Kao Hsiung (663) - wearing old number

1968

D: 1,650 tons (4,080 fl) **S:** 11 kts **Dim:** $99.98 \times 15.24 \times 3.4$

A: 8/40-mm AA (II \times 2, I \times 4) — 4/20-mm AA (II \times 2)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-12

M: 2 G.M. 12-567A diesels; 2 props; 1,700 hp Range: 15,000/9

Remarks: Transferred in 5-57, converted to command ship in 1964, with additional communications gear and radars. Retains bow doors.

♦ 1 ex-U.S. Cabildo-class dock landing ship Bldr: Gulf SB, Chickasaw, Ala.

Laid down L In serv.
618 CHEN HAI (ex-Fort Marion, LSD 22) 15-9-44 22-5-45 29-1-46

D: 4,790 tons (9,375 fl) **S:** 15.6 kts **Dim:** 139.52 (138.38 wl) \times 22.0 \times 5.49

A: 12/40-mm AA (IV × 2, II × 2) Electron Equipt: Radar: 1/LN-66, 1/SPS-5

M: 2 sets GT; 2 props; 9,000 hp Boilers: 2; 30.6 kg/cm², 393°C Fuel: 1,758 tons Range: 8,000/15 Man: 326 crew + several hundred troops

Remarks: Transferred by sale on 15-4-77, having been stricken from the U.S. Navy in 10-74. Modernized under FRAM-II program 12-59 to 4-60. Helicopter platform over 119.5 × 13.4 meter docking well, which can accommodate three LCUs, eighteen LCMs, or thirty-two amphibious armored troop carriers.

Note: Ashland-class, dock-landing ship Chung Cheng (639, ex-Tung Hai, ex-White Marsh, LSD 8) was stricken in 1984.

♦ 21 ex-U.S. LST 1 and LST 542-class tank landing ships

| | Bldr | In serv. |
|--|--|----------|
| Chung Cheng (ex-Lafayette | Chicago B & I, Seneca, Ill. | 29-12-44 |
| County, LST 859) | | |
| Chung Chi (ex-LST 1017) | Bethlehem, Fore River, Mass. | 12-4-44 |
| Chung Chiang (ex-San Bernardino County, LST 1110) | Missouri Valley B & I, Evans- ville, Ind. | 7-3-45 |
| Chung Chien (ex-LST 716) | Jeffersonville B & M, Ind. | 18-8-44 |
| Chung Chih (ex-Sagadohoc | American Br., Ambridge, Pa. | 6-4-45 |
| County, LST 1091) | American Br., Amoriage, 1 a. | |
| Chung Chuan (ex-LST 1030) | Boston Navy Yd. | 19-7-44 |
| 619 Chung Fu (ex-Iron County, LST 840) | American Br., Ambridge, Pa. | 11-12-44 |
| 697 Chung Hai (ex-LST 755) | American Br., Ambridge, Pa. | 29-7-44 |
| Chung Hsing (ex-LST 557) | Missouri Valley B & I, Evans- ville, Ind. | 5-5-44 |
| Chung Kuang (ex-LST 503) | Jeffersonville B & M, Ind. | 14-12-43 |
| 691 Chung Lien (ex-LST 1050) | Dravo, Pittsburgh, Pa. | 3-4-45 |
| Chung Ming (ex-Sweetwater | Dravo, Pittsburgh, Pa. | 13-4-45 |
| County, LST 1152) | | |
| Chung Pang (ex-LST 578), | Missouri Valley B & I, Evans- ville, Ind. | 15-7-44 |
| Chung Sheng (ex-LST(H) 1033) | Chicago B & I, Seneca, Ill. | 4-44 |
| Chung Shu (ex-LST 520) | Chicago B & I, Seneca, Ill. | 28-2-44 |

AMPHIBIOUS WARFARE SHIPS (continued)

| 624 Chung Shun (ex-LST 732) | Dravo, Pittsburgh, Pa. | 10-4-44 |
|---|--|---------|
| Chung Suo (ex-Bradley County, LST 400) | Newport News SB & DD, Va. | 7-1-43 |
| Chung Ting (ex-LST 537) | Missouri Valley B & I, Evans- ville, Ind. | 9-2-44 |
| Chung Wan (ex-LST 535) | Missouri Valley B & I, Evans- ville, Ind. | 4-2-44 |
| Chung Yeh (ex-Sublette County, LST 1144) | Chicago B & I, Seneca, Ill. | 28-5-45 |
| Chung Yung (ex-LST 574) | Missouri Valley B & I, Evans- ville, Ind. | 26-6-44 |
| | | |



Chung Kuang - wearing old number

1969

D: 1,653 tons (4,080 fl) S: 11.6 kts Dim: 99.98 × 15.24 × 3.4

A: Several: 2/76.2-mm DP (I \times 2) -6-8/40-mm AA (II \times 2, or I \times 2 or 4) - 4 - 8/20 - mm AA

M: 2 G.M. 12-567A diesels; 2 props; 1,700 hp Electric: 300 kw Fuel: 569 tons Range: 15,000/9 Man: 100-125 tot.

REMARKS: Six transferred in 1946, two in 1947, Chung Shu in 1948, seven in 1958, Chung Yun in 1959, Chung Kuang in 1960, Chung Yeh in 1961, and two subsequently. All extensively rebuilt during the late 1960s, in many cases becoming almost new ships; re-engined at the same time. Most have four pairs of Welin davits, while Chung Chih, Chung Yung, Chung Sheng, and Chung Shu have six, and Chung Chien has two; each pair of davits handles one LCVP. Five or more have two 76.2-mm guns. Chung Chih (ex-216, ex-LST 279) was stricken in 1978.

4 ex-U.S. LSM 1-class medium landing ships

| | Bldr | In serv. |
|----------------------------|---------------------------------------|----------|
| 637 Mei Lo (ex-LSM 362) | Brown SB, Houston, Tex. | 11-1-45 |
| 659 Mei Ping | Brown SB, Houston, Tex. | 23-2-45 |
| 694 Mei Sung (ex-LSM 457) | Western Pipe & Steel, San Pedro, Cal. | 28-3-45 |
| 649 Mei Tseng (ex-LSM 431) | Dravo, Wilmington, Del. | 25-2-45 |



Mei Tseng (649) - wearing old number

1969

D: 1,095 tons (fl) S: 12.5 kts Dim: 62.03 (59.89 wl) × 10.52 × 2.54 (max.)

A: 2/40-mm AA — 4 or 8/20 mm AA (I or II × 4) — 4/12.7 mm mg (I × 4)

M: Mei Lo, Mei Ping: 2 Fairbanks-Morse 38D8 * × 10 (others: 2 G.M. 16-278A) diesels; 2 props; 2,800 hp

Electric: 240 kw Fuel: 161 tons

Man: 60 tot.

REMARKS: Mei Sung and Mei Tseng transferred in 1946, Mei Ping in 11-56, and Mei Lo in 5-62

Bldr: Ishikawajima, Har-♦ 6 ex-U.S. LCU 1466-class utility landing craft ima, Japan

. . . Ho Meng (ex-LCU 1599) Ho Shan (ex-LCU 1596)

Ho Chuan (ex-LCU 1597) . . . Ho Mou (ex-LCU 1600)

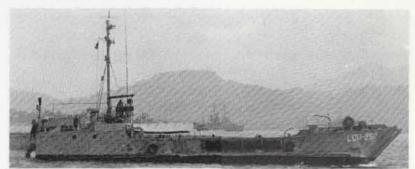
. . . Ho Seng (ex-LCU 1598) . . . Ho Shou (ex-LCU 1601)

D: 347 tons (fl) S: 8 kts Dim: 35.08 × 10.36 × 1.6 (max.) A: 4/20-mm AA (II × 2)

M: 3 Gray Marine 64/65YTL diesels; 3 props; 675 hp

Fuel: 11 tons Range: 1,200/6 Man: 14 tot.

Remarks: Built under Offshore Procurement Program. In service in 3-55. Cargo: 167 tons.



Ho Mou - wearing old number

1955

♦ 16 ex-U.S. LCU 501 (LCT (6))-class utility landing craft

| | In serv. | | In serv. |
|------------------------|----------|------------------------|----------|
| Ho Chang (ex-LCU 512) | 7-9-43 | Ho Deng (ex-LCU 1367) | 12-10-44 |
| Но Снао (ex-LCU 1429) | 8-12-44 | Ho Feng (ex-LCU 1397) | 26-10-44 |
| Ho Cheng (ex-LCU 1145) | 11-5-44 | Ho Hoei (ex-LCU 1218) | 25-8-44 |
| Ho Chi (ex-LCU 1212) | 16-8-44 | Ho Shun (ex-LCU 1225) | 4-9-44 |
| Ho Chie (ex-LCU 700) | 18-4-44 | Ho Teng (ex-LCU 1452) | 20-10-44 |
| Ho CHIEN (ex-LCU 1278) | 22-7-44 | Ho Tsung (ex-LCU 1213) | 17-8-44 |
| Ho Chun (ex-LCU 892) | 27-7-44 | Ho YAO (ex-LCU 1244) | 22-9-44 |
| Ho Chung (ex-LCU 849) | 7-8-44 | Ho Yung (ex-LCU 1271) | 19-8-44 |

D: 143 tons (309 fl) S: 10 kts Dim: 36.3 (32.0 wl) × 9.96 × 1.14

A: 2/20-mm AA (I×2)-2/12.7-mm mg

M: 3 G.M. 6-71 diesels; 3 props; 675 hp Electric: 20 kw Man: 10 tot.

Remarks: Six transferred between 1946 and 1948, the others between 1958 and 1959.

◆ several hundred U.S. LCM (3)- and LCM (6)-class landing craft

Bldrs: U.S. and Taiwan

D: 62 tons (fl) S: 9 kts Dim: 17.07 × 4.37 × 1.07

A: 1/20-mm AA or 12.7-mm mg in some

M: 2 Gray Marine 64HN9 diesels; 2 props; 450 hp Range: 130/9 Man: 9 tot.

REMARKS: LCM (3) are 56 tons (fl), 15.38 m overall. Cargo: LCM (3): 30 tons, LCM (6): 34 tons.

about 100 U.S. LCVP class

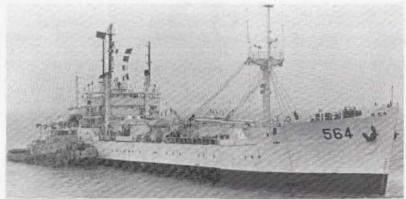
D: 13 tons (fl) S: 9 kts Dim: 10.9 × 3.21 × 1.04 A: 2/7.62-mm mg (I × 2) M: 1 Gray Marine 64HN9 diesel; 225 hp Range: 110/9 Man: 3 tot.

REMARKS: Most attached to LSTs and former APDs. Wooden construction. Cargo: 36 troops or 4 tons.

HYDROGRAPHIC SHIPS

◆ 1 ex-U.S. C1-M-AV1-class former transport Bldr: Walter Butler SY, Duluth, Minn.

398 Chiu Hua (ex-Sgt. George D. Keithley, T-AGS 35, ex-T-APc 117, ex-Acorn Knot)



Chiu Hua - wearing old number

1972

D: 4,100 tons (6,090 fl) S: 11.5 kts Dim: 103.18 (97.54 wl) × 15.24 × 5.33 A: 1/40-mm AA -2/20-mm AA $(I \times 2)$

M: 1 Nordberg TSM6 diesel; 1 prop; 1,756 hp Man: 72 tot.

Remarks: Completed in 1945 as a Maritime Commission cargo ship and taken over by the U.S. Army as a personnel transport. Transferred to the U.S. Navy in 1950 and converted for hydrographic-survey duties in 1966-67. Loaned to Taiwan on 29-3-72 and extended on 19-5-76; purchased outright 1981.

1 ex-U.S. Sotoyomo-class former auxiliary tug

Bldr: Gulfport Boiler & Welding Works, Port Arthur, Tex.

Laid down L In serv.

563 CHIU LIEN (ex-Geronimo, ATA 207)

10-11-44

4-1-45

1-3-45

HYDROGRAPHIC SHIPS (continued)



Chiu Lien (563)

1969

D: 835 tons (fl) S: 13 kts Dim: 43.59 (40.74 wl) × 10.31 × 4.01 A: 1/20-mm AA M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp Electric: 120 kw Fuel: 158 tons Man: 45 tot.

Remarks: Transferred in 2-69. Operated for the Institute of Oceanology and equipped with various oceanographic winches and laboratories.

◆ 1 ex-U.S. LSIL 351-class former landing craft

Bldr: Albina Eng. & Mach. Works, Portland, Ore.

Laid down In serv. 466 LIEN CHANG (ex-LSIL 1017) 31-1-44 14-3-44 12-4-44

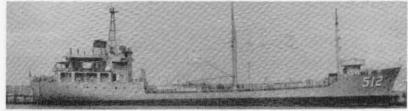
D: 387 tons (fl) S: 14.4 kts Dim: 48.46 (46.63 wl) × 7.21 × 1.73 A: 1/40-mm AA - 4/20-mm AA (I × 4) M: 8 G.M. 6-71 diesels; 2 props; 2,320 hp Fuel: 113 tons Man: 40 tot.

Remarks: Transferred in 5-58. Retains LSIL appearance.

AUXILIARY SHIPS

1 offshore-island support tanker

Bldr In serv. Ujina SB, Hiroshima, Japan 512 WAN SHOU 1-11-69



Wan Shou (512)

1970

D: 1,049 tons light (4,150 fl) **S**: 13 kts **Dim**: $86.5 \times 16.5 \times 5.5$

A: 2/40-mm AA $(I \times 2) - 2/20$ -mm AA $(I \times 2)$

M: 1 diesel; 1 prop; 2,100 hp Fuel: 230 tons Man: 70 tot.

Remarks: No underway-replenishment capability. Cargo: 2,600 tons.

• 3 ex-U.S. Patapsco-class support tankers Bldr: Cargill Inc., Savage, Minn.

| Chang Pei (ex-Pecatonica, AOG 57) | Laid down 6-12-44 | L 17-3-45 | In serv. 28-11-45 |
|---|----------------------|--------------|----------------------|
| Hsin Lung (ex-Elkhorn, AOG 7) | 7-9-42 | 15-5-43 | 12-2-44 |
| 515 Lung Chuan (ex-Endeavor, ex-Namakagon, AOG 53) | 1-8-44 | 4-11-44 | 10-5-45 |



Lung Chuan (515) - no armament

L. & L. Van Ginderen, 1979

D: 1,850 tons light (4,335 fl) S: 14 kts Dim: 94.72 (89.0 wl) × 14.78 × 4.78 A: 2/76.2-mm DP (I × 2) - 4/20-mm AA (I × 4)

M: 2 G.M. 16-278A diesels; 2 props; 3,300 hp Electric: 460 kw

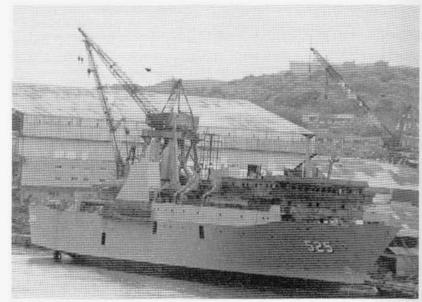
Fuel: 295 tons Range: 6,670/10 Man: 124 tot.

Remarks: Former gasoline tankers. Cargo: 2,040 tons. Chang Pei transferred on 24-4-61, Hsin Lung on 1-7-72, and Lung Chuan on 29-6-71 after serving in the New Zealand Navy as Antarctic supply ship since 5-10-62. All used for supplying offshore islands. All purchased outright 19-5-76.

♦ 1 new-construction tender/transport

Bldr: Tsoying Naval SY

525 Hai Tu (In serv. 2-85)



Hai Tu fitting out

D: 3,040 tons (fl) S: . . . Dim: $101.0 \times 17.0 \times$. . . A: 3/40-mm AA (I \times 3) Electron Equipt: Radar: 1/. . . nav.

M: 2 diesels; 2 props; . . . hp

Remarks: Configuration indicates a possible stern docking well for landing craft or small missile boats of the Hai Ou class.

• 1 transport

Bldr 522 LING YUEN Taiwan SB, Keelung

D: 4,000 tons (fl) S: . . . Dim: $100.2 \times 14.6 \times 5.0$ A: 2/20-mm AA (I \times 2) — 2/12.7-mm mg (I \times 2)

M: 1 6-cylinder diesel; 1 prop; . . . hp Man: 55 tot.

Remarks: 2,510 dwt/3,040 grt. Can carry 500 troops. There is also a slightly smaller Taiwanese-built transport, name not available.

 1 ex-U.S. Achelous-class transport Bldr: Kaiser Co., Vancouver, Wash.

Laid down In serv. 520 Wu Tai (ex-Sung Shan, ex-Agenor, ARL 3, 24-1-43 3-4-43 20-8-43 ex-LST 490)

D: 4,100 tons (fl) S: 11.6 kts Dim: 99.98 × 15.24 × 3.4 A: 8/40-mm AA (IV × 2) M: 2 G.M. 12-567A diesels; 2 props; 1,800 hp Electric: 500 kw Man: 100 men + 600 troops

Remarks: Converted to a repair ship while building. Transferred to France in 1951, then to Taiwan on 15-9-57. Converted to transport, 1973-74.

Bldr: Higgins, New Orleans, ♦ 1 ex-U.S. Army 427-class small transport La. (In serv. 21-12-44)

359 Yung Kang (ex-Mark, AKL 12, ex-AG 143, ex-Army FS 214)



Yung Kang (359) - wearing old number

D: 693 tons (899 fl) S: 12 kts Dim: 54.86 (52.37 wl) × 9.75 × 3.05 A: 2/20-mm AA (I × 2) M: 2 G.M. 6-278A diesels; 2 props; 1,000 hp Electric: 225 kw Fuel: 100 tons Range: 4,000/11 Man: 37 tot.

REMARKS: Built as an aircraft maintenance ship for the U.S. Army Air Corps. Transferred to the U.S. Navy on 30-9-47 and to Taiwan on 1-6-71. Sold outright on 19-5-76. Now has intelligence-gathering equipment.

♦ 1 ex-U.S. Amphion-class repair ship

Bldr: Tampa SB, Tampa, Fla.

Laid

In serv.

521 Yu Tai (ex-Cadmus, AR 14)

30-10-44

5-8-45 23-4-46



Yu Tai (521) — with MARISAT SATCOMM radome L. & L. Van Ginderen, 7-85

D: 7,826 tons light (14,490 fl) S: 16.5 kts

Dim: 149.96 (141.73 pp) × 21.18 × 8.38 Electron Equipt: Radar: 1/SPS-5

A: 1/127-mm DP -6/40-mm AA (II \times 3)

M: 1 set Westinghouse GT; 2 prop; 8,500 hp Electric: 3,600 kw

Boilers: 2 Foster-Wheeler D-type; 30.6 kg/cm², 399°C Fuel: 2,430 tons

Man: 920 tot.

Remarks: Transferred on 15-1-74.

 1 ex-U.S. Diver-class salvage ship Bldr: Basalt Rock Co., Napa, Cal.

> Laid down T. In serv.

324 Tai Hu (ex-Grapple, ARS 7) 8-9-42 31-12-42 16-12-43

D: 1,530 tons (1,900 fl) **S:** 14.8 kts **Dim:** 65.08 (63.09 wl) \times 11.89 \times 4.29

A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/SPS-53 M: 4 Cooper-Bessemer GSB-8 diesels, electric drive; 2 props; 3,060 hp

Electric: 460 kw Fuel: 283 tons Range: 9,000/14; 20,000/7 Man: 85 tot.

Remarks: Transferred on 1-12-77.

4 ex-U.S. Cherokee-, Abnaki-* and Achomawi-**class fleet tugs

Bldrs: Ta Tung, Ta Wan: United Eng., Alameda, Cal.; others: Charleston SB & DD, Charleston, S.C.

| | Laid down | L | In serv. |
|------------------------------------|-----------|----------|----------|
| 542 Ta Han (ex-Tawakoni, ATF 114)* | 19-5-43 | 28-10-43 | 15-9-44 |
| 548 TA Tung (ex-Chickasaw, ATF 83) | 14-2-42 | 23-7-42 | 4-2-43 |
| 550 Ta Wan (ex-Apache, ATF 67) | 8-11-44 | 8-5-42 | 12-12-42 |
| 551 N (ex-Shakori, ATF 162)** | 9-5-45 | 9-8-45 | 20-12-45 |

D: 1,235 tons (1,675 fl) S: 15 kts Dim: 62.48 (59.44 wl) × 11.73 × 4.67

A: 1/76.2-mm DP - 2/12.7-mm mg

M: 4 G.M. 12-278 diesels, electric drive; 1 prop; 3,000 hp Electric: 260-400 kw Fuel: 295 tons Range: 6,500/16; 15,000/8 Man: 85 tot.

REMARKS: Ta Tung transferred 1-66 (sold on 19-5-75), Ta Wan on 30-6-74, Ta Han on 1-6-78, and ex-ATF 162 on 29-8-80. Ta Han has Busch-Sulzer BS-539 diesels and only a small exhaust pipe, and ex-ATF 162 has G.M. 12-278A diesels.

Bldr: Levingston SB, Orange, Tex. 3 ex-U.S. Sotoyomo-class ocean tugs

| | Laid down | L | In serv. |
|-----------------------------------|-----------|----------|----------|
| 395 TA PENG (ex-Mohopac, ATA 196) | 24-11-44 | 21-12-44 | 6-3-45 |
| 357 Ta Sueh (ex-Tonkawa, ATA 176) | 30-1-44 | 1-3-44 | 19-8-44 |
| 367 TA TENG (ex-Cahokia, ATA 186) | 16-8-44 | 18-9-44 | 24-11-44 |

D: 435 tons (835 fl) **S:** 13 kts **Dim:** 43.59 $(40.74 \text{ wl}) \times 10.31 \times 4.01$

A: 1/76.2-mm DP -2/20-mm AA (I \times 2)

M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp

Electric: 120 kw Fuel: 158 tons Man: 45 tons

REMARKS: Ta Peng transferred on 1-7-71, Ta Sueh in 4-62, and Ta Teng on 29-3-72 after serving the U.S. Air Force since 1971. Chiu Lien is an oceanographic research ship.

SERVICE CRAFT

Bldr: Manitowoc SB, Manitowoc, Wisc. ♦ 1 ex-U.S. 174-foot yard oiler

Laid down L In serv. 504 Szu Ming (ex-YO 198) 21-4-45 14-7-45 10-2-45

D: 650 tons (1,595 fl) **S:** 10.5 kts **Dim:** $53.04 \times 9.75 \times 4.10$

A: 1/40-mm AA -5/20-mm AA (I \times 5)

M: 1 Union diesel; 1 prop; 560 hp Man: 65 tot.

Remarks: Transferred in 12-49. In reserve.

♦ 6 ex-U.S. Navy YTL 422-class small harbor tugs

YTL 8 (ex-ST-2002) YTL 10 (ex-ST-2008) YTL 12 (ex-YTL 584) YTL 9 (ex-ST-2004) YTL 11 (ex-YTL 454) YTL 14 (ex-YTL 585)

D: 70 tons (80 fl) S: 8 kts Dim: 20.3 × 5.18 × 2.4

M: 1 diesel; 1 prop; 375 hp

REMARKS: YTL 8 to YTL 10 transferred in 3-62, YTL 11 in 8-63, YTL 12 and YTL 14 in 7-64. First three are former U.S. Army units, built during World War II.

Bldr: Pacific Bridge, Alameda, ♦ 1 ex-U.S. ARD 12-class floating dry dock Cal.

Fo Wu 6 (ex-Windsor, ARD 22)

Dim: 149.86 × 24.69 × 1.73 (light) Capacity: 3,500 tons

Remarks: In service 4-44, transferred on 19-5-76; purchased 1981.

♦ 1 ex-U.S. ARD 2-class floating dry dock Bldr: Pacific Bridge, Alameda, Cal.

Fo Wu 5 (ex-ARD 9)

Dim: 148.03 × 21.64 × 1.75 (light) Capacity: 3,500 tons

Remarks: In service 9-43, transferred on 12-1-77; purchased outright 1981.

Bldr: V. P. Loftis, Wilmington, N.C. ◆ 2 ex-U.S. floating dry docks Han Jih (ex-AFDL 34) HAY TAN (ex-AFDL 36)

Dim: $73.15 \times 19.69 \times 1.3$ (light) Capacity: 1,000 tons

REMARKS: In service 5- and 6-44, transferred in 3-47 and 7-59.

1 ex-U.S. floating dry dock

KIM MEN (ex-AFDL 5)

Dim: 60.96 × 19.5 × 1.04 Capacity: 1,000 tons

Remarks: Built in 1944, transferred in 1-48.

CUSTOMS SERVICE

Subordinate to the Ministry of Finance

PATROL SHIPS

 ◆ 1 or more 75-meter design Bldr: . . . , Taiwan

Remarks: A flush-decked design resembling South Korean Coast Guard "Sea Whale" design, but somewhat smaller. Armed with 1/40-mm AA and several 20-mm AA. Diesel-powered.

2 ex-U.S. Admirable-class former minesweepers

| | Bldr | L | In serv. |
|-----------------------------------|-------------------------|---------|----------|
| Hung Hsing (ex-Embattle, MSF 226) | American SB, Lorain, O. | 17-9-44 | 25-4-45 |
| N (ex -Improve, MSF 247) | Savannah Mach., Ga. | 26-9-43 | 29-2-44 |

D: 945 tons (fl) **S:** 14.8 kts **Dim:** $56.24 \times 10.06 \times 2.97$

A: 2/20-mm AA M: 2 Cooper-Bessemer GSB-8 diesels; 2 props; 1,710 hp

Remarks: Transferred to Taiwan in late 1940s and handed over to the Customs Service in early 1970s.

♦ 3 ex-U.S. PC 461-class submarine chasers

| | Bldr | In serv. |
|---|----------------------------|----------|
| N (ex-Tung Kiang, ex-Placerville, PC 1087) | G. Lawley, Neponset, Mass. | 22-5-44 |
| N (ex-Hsi Kiang, ex-Susanville, PC 1149) | Defoe, Bay City, Mich. | 22-6-44 |
| N (ex-Pei Kiang, ex-Hanford, PC 1142) | Defoe, Bay City, Mich. | 3-6-44 |

D: 280 tons (450 fl) **S:** 19 kts **Dim:** $52.93 \times 7.01 \times 2.72$

A: 2/20-mm AA (I×2) M: 2 G.M. 16-278A diesels; 2 props; 2,880 hp

Electric: 120 kw Fuel: 62 tons Range: 6,000/10

Remarks: Transferred in 7-57 and turned over to the Customs Service in early 1970s.

PATROL CRAFT

• 3 aluminum-hulled Bldr: China SB, Kohsiung

Hai Ping (In serv. 28-2-79) Hai An (In serv. 18-3-79)

Hai Cheng (In serv. 1979)

D: . . . S: . . . Dim: 26.0 × 5.6 × 2.7 A: . . . M: 2 MTU 8V331 TC81 diesels; 2 props; . . . hp Dim: $26.0 \times 5.6 \times 2.7$

Bldr: Halter Marine, New Orleans (In serv. 1977) 2 aluminum-hulled

D: 70 tons S: . . . Dim: 23.77 × . . . × . . . A: . . .

M: 2 G.M. diesels; 2 props; . . . hp

TANZANIA

United Republic of Tanzania

Personnel (1985): Approximately 700 men

Merchant Marine (1984): 39 ships -58,699 grt (4 tankers -3,182 grt)

PATROL BOATS

♦ 4 modified North Korean Nampo class

D: 82 tons (fl) S: 40 kts Dim: 27.7 × 6.1 × 1.8

A: 4/14.5-mm mg (II × 2) Electron Equipt: Radar: 1/Pot Head

M: 4 M50F diesels; 4 props; 4,800 hp Range: 375/40 Man: 19 tot.

Remarks: Transferred 1979-81; lack the bow ramp employed on the landing craft version used by North Korea.

♦ 7 Chinese Shanghai-II class

JW 9861 through JW 9867



JW 9862

1975

D: 122.5 tons (135 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55

A: 4/37-mm AA (II × 2) - 4/25-mm AA (II × 2)

Electron Equipt: Radar: 1/Pot Head

M: 2 M50F4, 1,200-hp diesels; 2 12D6, 910-hp diesels; 4 props; 4,220 hp

Electric: 39 kw Endurance: 7 days Range: 750/16.5 Man: 36 tot.

REMARKS: Transferred 1970-71.

TORPEDO BOATS

♦ 4 Chinese Huchuan class

Bldr: Hudung SY, Shanghai

JW 9841 through JW 9844



JW 9842

1976

D: 39 tons (45 fl) S: 50 kts Dim: 22.50 × 3.80 × 1.146

A: 4/14.5-mm mg (II \times 2) -2/533-mm TT (I \times 2)

Electron Equipt: Radar: 1/Skin Head Electric: 5.6 kw

M: 3 M50 diesels; 3 props; 3,600 hp Range: 500/30 Man: 11 tot.

Remarks: Transferred 1975. Unlike Chinese Navy Huchuans, these craft have no hydrofoils. Gunmounts are fore and aft, while on most units of this class both mounts are aft.

COASTAL PATROL CRAFT

• 2 East German Schwalbe-class former inshore minesweepers

ARAKA SALAAM

D: 70 tons (fl) S: 14 kts Dim: 26.0 × 4.5 × 1.4

A: 2/25-mm AA (II × 2) M: 2 diesels; 2 props; 600 hp

Remarks: Transferred in 1-66 and 1-67. Minesweeping gear removed. No radar.

♦ 4 Chinese Yu Lin-class craft

D: 9.8 tons (fl) **S**: 25 kts **Dim**: 13.0 × 2.9 × 1.1

A: 2/12.7-mm mg (I \times 2) M: 1 diesel; 1 prop; 300 hp

Remarks: Transferred by the Chinese People's Republic in 11-66. These craft operate on Lake Victoria.

• 2 aluminum-hulled craft

Bldr: Bayerische Schiffsbau, West Germany, 1967

RAFIKI UHURU

D: 40 tons (fl) S: 14 kts Dim: 24.0 × 5.0 × 1.3

A: 1/40-mm AA-2/mg M: 2 Caterpillar diesels; 2 props . . . hp

Note: The 3 ex-East German, ex-Soviet P-6 class converted torpedo boats and the one ex-Soviet Poluchat-1 class armed torpedo retriever were discarded by 1984.

MISCELLANEOUS UNITS

 1 coastal survey craft 1979) Bldr: Bayerische Schiffsbau, West Germany (In serv.

UTAFITI

D: 33 tons (fl) S: 14 kts Dim: 19.05 × . . . × 1.0

Electron Equipt: Radar: 1/Decca 060

M: 2 Caterpillar diesels; 2 props; 456 hp Range: 250/12 Man: 6 tot.

Remarks: Has Atlas DESO 10 echo-sounder. Steel hull, aluminum superstructure.

♦ 2 ex-Chinese landing craft for logistics duties

THAILAND

Kingdom of Thailand

Personnel (1985): Navy: approximately 3,000 officers, 23,000 enlisted total— Marines: 1,000 officers, 19,000 enlisted

Merchant Marine (1985): 225 ships - 517,444 grt

(tankers: 60 ships - 139,850 grt)

Naval Aviation: Available are: 9 Grumman S-2F land-based ASW aircraft; 3 Fokker F-27 Maritime, 8 Nomad Searchwater, and 2 Cessna T-337 Skymaster for maritime surveillance; 2 CL-215 and 2 HU-16 amphibians; 20 C-46 and C-47 transports; 10 Cessna 0-1 Bird Dog observation aircraft; 14 U-17 Skywagon utility aircraft, 2 Lake L-A4 Skimmer training amphibians; and 3 Bell UH-1H and 10 Bell 212 helicopters. Fourteen Marconi Stingray ASW torpedoes were ordered 9-84 for the F-27 Maritimes and for the new U.S.-built corvettes. A fourth Fokker F-27 has been ordered, for delivery mid-1986.

SUBMARINES

Note: The Thai Navy planned to order three submarines during 1985. Negotiations have been under way in 1983 with a number of submarine builders, with China (Romeo class), Italy, and West Germany as the leading contenders.

FRIGATES

♦ 1 "Yarrow frigate" class Bldr: Yarrow

elass Bldr: Yarrow, Scotstoun, Glasgow, Scotland

7 Makut Rajakumarn

Laid down 11-1-70

18-11-71

In serv. 7-5-73



Makut Rajakumarn (7) - prior to modernization

R.A.N., 1981

D: 1,650 tons (1,900 fl) S: 26 kts (gas turbines)/18 kts (diesel)

Dim: 97.56 (92.99 pp) × 10.97 × 5.5

A: 2/114-mm DP Mk 8—2/40-mm AA (I×2)—1/Limbo ASW mortar (III×1)—2/d.c. projectors, 1/d.c. rack

Electron Equipt: Radar: 1/Decca 626, 1/H.S.A. DA-05, 1/H.S.A. WM-22

Sonar: 1/170B, 1/162, 1/Plessey MS27 M: CODOG: 1 Rolls-Royce Olympus TBM 3B gas turbine (23,125 hp), 1

Crossley-Pielstick 12 PC2 diesel; 2 CP props; 6,000 hp

Electric: 2,200 kw Range: 1,000/25; 4,000/18 Man: 16 officers, 124 men

FRIGATES (continued)

Remarks: Similar to the Malaysian Rahmat but longer and more heavily armed. Highly automated. The WM-22 track-while-scan radar controls the 114-mm guns. Modernized 1984: new air-search radar; Sea Cat missile launcher and director deleted.

♦ 2 ex-U.S. PF 103 class

| | Bldr | Laid down | L | In serv. |
|------------------------|--------------------------|-----------|----------|----------|
| 5 Tapi (ex-PF 107) | American SB, Toledo, Oh. | 1-4-70 | 17-10-70 | 1-11-71 |
| 6 KHIRIRAT (ex-PF 108) | Norfolk SB & DD, Va. | 18-2-72 | 2-6-73 | 10-8-74 |



Tapi (5) - as modernized (composite view)

1983

D: 864 tons light (1,143 fl) S: 20 kts Dim: $84.04 \times 10.06 \times 3.05$ (4.27 sonar) A: 1/76-mm OTO Melara Compact DP — 1/40-mm AA — 2/20-mm AA (I \times 2) — 2/12.7-mm mg (I \times 2) — 6/324-mm Mk 32 ASW TT (III \times 2) — 1/Mk 9 d.c. rack Electron Equipt: Radar: 1/Raytheon navigational, 1/SPS-6, 1/H.S.A. WM-25 Sonar: 1/SQS-17A

M: 2 Fairbanks-Morse 38D8%-10 diesels; 2 props; 5,300 hp Electric: 750 kw Fuel: 110 tons Range: 2,400/18 Man: 15 officers, 135 men

Remarks: Ordered 27-6-69 and 25-6-71, respectively. Patterned after the Italian-built Pattimura class for Indonesia; four sisters built for the Iranian Navy. Tapi completed modernization in 1983 with the OTO Melara gun replacing the forward U.S. 76.2-mm mount, a Bofors 40-mm on a raised bandstand replacing the aft 76.2-mm mount, 2 single 20-mm AA replacing the original twin 40-mm mount, and an H.S.A. WM-25 track-while-scan radar director being mounted above the bridge; a Hedgehog ASW mortar was removed. Khirirat in modernization 1985-86.

• 1 ex-U.S. Cannon class

Bldr: Western Pipe and Steel, Los Angeles

2 Pin Klao (ex-*Hemminger*, DE 746) Laid down L In serv. 8-5-43 27-12-43 30-5-44



Pin Klao (3)

1980

D: 240 tons (fl) S: 20 kts Dim: 93.27 (91.44 wl) \times 11.15 \times 4.3 (sonar) A: 3/76.2-mm DP Mk 22 (I \times 3) - 6/40-mm AA (II \times 3) - 2/12.7-mm mg (I \times 2) - 1/Mk 10 Hedgehog - 6.324-mm Mk 32 ASW TT (III \times 2) - 8/Mk 6 d.c. projectors - 2/Mk 9 d.c. racks

Electron Equipt: Radar: 2/navigational, 1/SC-2, 1/Mk 26, 1/Mk 34 Sonar: . . . EW: WLR-1

M: 2 G.M. 16-278A diesels, electric drive; 2 props; 6,000 hp Electric: 680 kw Fuel: 260 tons Range: 11,500/11 Man: 220 tot.

REMARKS: Transferred 7-59; sold outright 6-6-75, at which time the ship underwent extensive overhaul in Guam. Has Mk 52 radar GFCS for 76.2-mm guns, one Mk 63 radar GFCS and two Mk Mod. 2 optical GFCS for the 40-mm guns. To replace *Maeklong* as cadet training ship when corvette *Ratanakosin* is delivered.

• 2 ex-U.S. Tacoma class

Bldr: Consolidated Steel, Los Angeles

1 Tahchin (ex-Glendale, PF 36) 2 Prasae (ex-Gallup, PF 47) Laid down L In serv. 6-4-43 28-5-43 1-10-43 18-8-43 17-9-43 29-2-44



Tahchin

1977

D: 1,430 tons (2,100 fl) S: 19 kts Dim: 92.63 (87.02 pp) \times 11.43 \times 4.17 (hull) A: 3.76.2-mm DP (I \times 3) — 2/40-mm AA (I \times 2) — 9/20-mm AA (I \times 9) — 1/Mk 10 Hedgehog — 2/324-mm Mk 32 ASW TT (I \times 2) — 8/Mk 6 d.c. projectors — 2/Mk 9 d.c. racks

Electron Equipt: Radar: 2/. . . nav., 1/SPS-6—Sonar: QCU

M: 2 sets triple-expansion steam; 2 props; 5,500 hp

Boilers: 2, 3-drawn Express; 16.9 kg/cm² Fuel: 685 tons

Range: 5,600/16; 7,800/12 Man: 180 tot.

Remarks: Transferred 29-10-57. Both refitted at Guam in the early 1970s. Last active examples of a class that once numbered 100 ships. To be stricken with delivery of the Ratanakosin-class corvettes. Both used primarily for training.

CORVETTES

♦ 0 (+2 + 1) PFMM Mk 16 class Bldr: Tacoma Boatbldg., Tacoma, Wash.

| | | Laid down | L | In serv. |
|---|-------------|-----------|-----|----------|
| | RATANAKOSIN | 6-2-84 | -85 | 1986 |
| ٠ | SUKHOTHAI | 26-3-84 | -86 | 1987 |

D: 840 tons normal (890 fl) S: 26 kts Dim: 76.82 × 9.55 × 2.44

A: 8/Harpoon SSM (IV \times 2) — 1/Albatros SAM system (VIII \times 1, . . . Aspide missiles) — 1/76-mm OTO Melara DP — 2/40-mm Breda AA (II \times 1) — 2/20-mm AA (I \times 2) — 6/324-mm Mk 32 ASW TT (III \times 2)

Electron Equipt: Radar: 1/. . . nav., 1/H.S.A. DA-05, 1/H.S.A. WM-25 Sonar: Krupp-Atlas

EW: Elettronica intercept; Dagaie chaff RL M: 2 MTU 20V1163 TB83 diesels; 2 props; 14,730 hp

REMARKS: Ordered 9-5-83 for delivery in 1985-86. Enlarged version of Saudi Arabian PCG class. Will have H.S.A. Mini-SADOC weapons control. A third unit may be built in Thailand. Program slowed by builder's financial problems.

GUIDED-MISSILE PATROL BOATS

♦ 3 Ratcharit class Bldr: Breda, Venice, Italy

L In serv.
4 RATCHARIT 30-7-78 10-8-79
5 WITTHAYAKOM 2-9-78 12-11-79
6 UDOMET 28-9-78 21-2-80



Ratcharit (4)

French Navy, 1980

D: 235 tons light (270 fl)
 S: 36 kts
 Dim: 49.8 (47.25 pp) × 7.5 × 1.68
 A: 4/MM 38 Exocet (II × 2) — 1/76-mm DP OTO Melara — 1/40-mm AA Breda Electron Equipt: Radar: 1/navigational, 1/H.S.A. M-25
 M: 3 MTU MD20 V538 TB91 diesels; 3 CP props; 13,500 hp

Electric: 440 kw Range: 650/36; 2,000/15 Man: 7 officers, 38 men

Remarks: Ordered 23-7-76. Can make 20 kts on two engines.

GUIDED-MISSILE PATROL BOATS (continued)

| • 3 Prabrarapak class | Bldr: Singapore SB & Eng. Co., Jurong, Singapore |
|-----------------------|--|
|-----------------------|--|

| | | L | In serv. |
|---|---------------|----------|----------|
| 1 | PRABRARAPAK | 29-7-75 | 28-7-76 |
| 2 | HANHAK SATTRU | 28-10-75 | 6-11-76 |
| 3 | SUPHAIRIN | 20-2-76 | 1-2-77 |



Hanhak Sattru (2)

G. Arra, 1981

D: 224 tons (260 fl) S: 41 kts Dim: 44.9 × 7.0 × 2.1 (2.46 props) A: 5/Gabriel-I (III × 1, I × 2) - 1/57-mm Bofors AA - 1/40-mm Bofors AA Electron Equipt: Radar: 1/Decca TM 626, 1/H.S.A. WM-28 EW: passive intercept system

M: 4 MTU 16V538 TB92 diesels; 4 props; 14,000 hp Electric: 405 kVA Range: 500/38.5; 1,500/16 Man: 40 tot.

REMARKS: Similar to the Singapore Navy's Lürssen-designed boats; built under license, 103-mm rocket flare launch rails are mounted on the 57-mm mount.

PATROL BOATS

| M Mk 5 class | Bldr: It | al-Thai SY, Samutprakarr |
|----------------------|----------------------|---|
| Laid down 15-1-82 | L 27-7-83 | In serv. 16-9-83 |
| | 9-3-84 | 5-84 |
| | 25-5-84 | 7-84 |
| | 26-10-84 | 14-10-85 |
| | *** | * * * |
| | | * * * |
| | Laid down 15-1-82 | Laid down L 15-1-82 27-7-83 9-3-84 25-5-84 26-10-84 |

D: 270 tons (300 fl) S: 22 kts Dim: 50.14 (47.22 wl) × 7.30 × 1.58 (1.80 props) A: 1/76.2-mm U.S. Mk 26 DP-1/40-mm AA-2/20-mm AA (I×2)-2/12.7-mm mg

Electron Equipt: Radar: 1/. . . nav. M: 2 MTU 16V538 TB91 diesels; 2 props; 6,840 hp

Electric: 420 kw Fuel: 80 tons Range: 2,500/15 Man: 56 tot.

REMARKS: First four ordered 9-9-81, others on 27-12-83 and 31-8-84. NA 18 GFCS.

| ♦ 3 MV 400th design Bldr: | Breda, Puerto Marghera, Venice, Italy | |
|---------------------------|---------------------------------------|--|
|---------------------------|---------------------------------------|--|

| | Laid down | L | In serv. |
|------------|-----------|--------|----------|
| 1 CHONBURI | 15-8-81 | 7-6-82 | 22-2-83 |
| 2 SONGKHLA | 15-9-81 | 6-9-82 | 12-83 |
| 3 Рицкет | 15-12-81 | 3-2-83 | 5-84 |



Chonburi (1)

U.S. Navy, 1983



Songkhla (2)

Ships of the World, 1983

D: 400 tons (450 fl) S: 30 kts Dim: 60.40 (57.50 pp) \times 8.80 \times 1.95 A: 2/76-mm OTO Melara DP — 2/40-mm Breda AA (II \times 1)

Electron Equipt: Radar: 1/H.S.A. ZW-06, 1/H.S.A. WM-22/61, 1/H.S.A. LIROD EW: passive intercept, 4/Hycor Mk 135 chaff RL (VI × 4)

M: 2 MTU 20V538 TB92 diesels; 3 CP props; 15,000 hp (12,600 sust.) Electric: 800 kw Range: 900/29; 2,500/18 Man: 7 officers, 38 men

Remarks: Ordered 11-79, originally for delivery in 1982, but this slipped considerably. First unit delivered 29-11-82 by shipyard. Able to accommodate anti-ship missiles, but none were to be installed at delivery. Steel hull, aluminum-alloy superstructure. Have LIROD-8 radar optronic GFCS to back up the WM-22/61 system. The chaff system is the same as the U.S. Navy's Mk 36 SRBOC.

♦ 6 (+ . . .) T 93 class

Bldr: Royal Thai Navy Dockyard, Bangkok

T 93 (L: 1973)

T 94 (In serv. 16-9-81)

T 95 (In serv. 1981)

T 96 (In serv. 1982)

T 97 (In serv. 16-9-83)

T 98 (In serv. 1984)



1983

D: 117 tons (125 fl) S: 25 kts Dim: 34.00 (32.00 wl) × 5.70 × 1.40 (1.65 props) A: 2/40-mm 60-cal. AA (I × 2) -2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/Decca . . .

M: 2 MTU 12V538 TB81 diesels; 2 props; 3,300 hp Man: 16 tot.

Remarks: Revised version of T 91 design.

♦ 2 T 91 class

Bldr: Royal Thai Naval Dockyard, Bangkok

T 91 (L: 1965) T 92 (L: 1973)



T 92

G. Arra, 1976

D: 87.5 tons S: 25 kts Dim: 31.8 × 5.36 × 1.5

A: 2/40-mm AA (I×2)-2/12.7-mm mg (I×2) Electron Equipt: Radar: 1/Decca .

M: 2 MTU diesels; 2 props; 3,300 hp

Range: 770/21 Man: 21 tot.

Remarks: T 91 has a longer superstructure and no spray strakes on the hull sides forward, and only one 40-mm AA gun. In refit 1984-85.

PATROL BOATS (continued)

| ♦ 10 ex-U.S. PGM 71 class | Bldr: Peterson Builders, S | turgeon Bay, | Wis. |
|---------------------------|----------------------------|--------------|---------|
| T. | In serv | T. | In serv |

| | L | In serv. | | L | In serv. |
|-------------------|----------|----------|-------------------|---------|----------|
| T 11 (ex-PGM 71) | 22-5-65 | 1-2-66 | T 16 (ex-PGM 115) | 24-4-69 | 12-2-70 |
| T 12 (ex-PGM 79) | 18-12-65 | 1967 | T 17 (ex-PGM 116) | 3-6-69 | 12-2-70 |
| T 13 (ex-PGM 107) | 13-4-67 | 28-8-67 | T 18 (ex-PGM 117) | 24-6-69 | 12-2-70 |
| T 14 (ex-PGM 113) | 3-6-69 | 18-8-69 | T 19 (ex-PGM 123) | 4-5-70 | 25-12-70 |
| T 15 (ex-PGM 114) | 24-6-69 | 18-8-69 | T 20 (ex-PGM 124) | 22-6-70 | 10-70 |



D: 130 tons (144 fl) S: 17 kts Dim: 30.81 × 6.45 × 2.3

A: 1/40-mm AA - 2/20-mm AA (II × 1) - 2/12.7-mm mg (I × 2) - 1/81-mm

M: 8 G.M. 6-71 diesels; 2 props; 2,040 hp Range: 1,000/12 Man: 30 tot.

Remarks: An over-and-under 81-mm mortar/12.7-mm mounting has replaced the original 20-mm AA gun on the fantail.

♦ 3 ex-U.S.C.G. Cape class Bldr: U.S. Coast Guard, Curtis Bay, Md. (In serv. 1953)

T 81 (ex-CG 13) T 82 (ex-CG 14) T 84 (ex-CG 16)



T 84 - with old number

1967

D: 105 tons (fl) S: 18 kts Dim: 28.95 × 5.8 × 1.55

A: 1/20-mm AA — 2/Mk 20 Mousetrap ASW RL — 2/d.c. racks Electron Equipt: Radar: 1/SPN-21

Sonar: QCU
M: 4 Cummins VT-12-M-700 diesels; 2 props; 2,200 hp Electric: 40 kw
Fuel: 12 tons Range: 2,600/9 Man: 15 tot.

Remarks: Transferred in 1954. Sister T 83 stricken 1982.

♦ 5 ex-U.S. PC 461 class

| The state of the s | | | |
|--|----------------------------|----------|----------|
| | Bldr | L | In serv. |
| 1 Sarasin (ex-PC 495) | Dravo, Pittsburgh | 30-12-41 | 23-4-42 |
| 4 Phali (ex-PC 1185) | Gibbs, Jacksonville, Fla. | 27-8-43 | 24-4-44 |
| 5 Sukrip (ex-PC 1218) | Luders, Stamford, Conn. | 24-10-43 | 29-5-44 |
| 6 Tongpliu (ex-PC 616) | G. Lawley, Neponset, Mass. | 4-7-42 | 19-8-42 |
| 7 LIULOM (ex-PC 1253) | Brown, Houston, Tex. | 14-10-42 | 1-4-43 |

D: 280 tons (450 fl) **S:** 19 kts **Dim:** $52.93 \times 7.01 \times 2.31$ (3.31 sonar)

A: 1/75.2-mm DP—1/40-mm AA—5/20-mm AA (I × 5)—2/324-mm Mk 32

ASW TT (I × 2) -2/Mk 6 d.c. projectors -2 d.c. racks

M: 2 Hoover, Owens, & Rentschler RB-99DA diesels; 2 props; 2,560 hp

Electric: 120 kw Fuel: 60 tons Range: 6,000/10 Man: 62-71 tot.



Tongpliu (6) — outboard the now-stricken Thayanchon

REMARKS: In poor condition. Transferred 1947-52. Sarasin does not have the two fixed ASW torpedo tubes. Tongpliu and Liulom have two Fairbanks-Morse 38D8½ diesels; 2,880 hp. Sister Thayanchon (2, ex-PC 575) stricken 1982; Longlom (8, ex-PC 570) in 1984; the others are overdue to follow.

PATROL CRAFT

♦ 0 (+1) Hysacat 18 class Bldr: Tecnautic, Thailand

Remarks: 40-ton, 36-kt prototype to deliver late 1986.

| ♦ 16 T | 213 class | Bldr: Ital-Thai Development Co., Bangk | | ok |
|--------|-----------|--|----------|----|
| | In serv. | | In serv. | |
| T 213 | 29-8-80 | T 221 | 16-9-81 | |
| T 214 | 29-8-80 | T 222 | 16-9-81 | |
| T 215 | 29-8-80 | T 223 | 16-9-81 | |
| T 216 | 26-3-81 | T 224 | 19-11-81 | |
| T 217 | 26-3-81 | T 225 | 28-3-84 | |
| T 218 | 26-3-81 | T 226 | 28-3-84 | |
| T 219 | 16-9-81 | T 227 | 1984 | |
| T 220 | 16-9-91 | T 228 | 1984 | |
| | | | | |



T 216 — alongside T 92

1981

D: 34 tons (fl) **S:** 22 kts (18 sust.) **Dim:** $19.8 \times 5.3 \times 1.5$

A: 1/20-mm AA—1/12.7-mm mg—1/81-mm mortar

Electron Equipt: Radar: 1/Decca 110

M: 2 MTU diesels; 2 props; 1,300 hp Man: 1 officer, 7 men

Remarks: Aluminum construction. Intended for fisheries protection duties.

 12 ex-U.S. Swift Mk II-class inshore patrol craft gan City, La.
 Bldr: Swiftships, Morgan City, La.

T 27 through T 35 T 210 through T 212

D: 22.5 tons (fl) S: 25 kts Dim: 15.64 × 4.14 × 1.06

A: 3/12.7-mm mg (II × 1, and 1 combined with an 81-mm mortar)

Electron Equipt: Radar: 1/Raytheon 1500B Range: 400/24 M: 2 G.M. 12V71 N diesels; 2 props; 860 hp Man: 1 officer, 7 men

Remarks: Transferred 1967-75.

♦ 37 ex-U.S. PBR Mk II river patrol boats

 $\begin{array}{ll} \textbf{D: 8 tons (fl)} & \textbf{S: 24 kts} & \textbf{Dim: } 9.73 \times 3.53 \times 0.6 \\ \textbf{A: } 3/12.7\text{-mm mg (II} \times 1, I \times 1) - 1/60\text{-mm mortar} \end{array}$

M: 2 Detroit 6V53 N diesels; 2 Jacuzzi waterjets; 430 hp

Range: 150/23 Man: 4 tot.

Remarks: Transferred: 20 in 1966-67; 10 in 1972; 7 in 1973. Employed on upper Mekong River.

• 3 ex-U.S. 36-foot RPC class

T 21 T 22 T 23

D: 10.4 tons (13 fl) S: 14 kts Dim: 10.9 × 3.15 × 1.0

A: 4/12.7-mm mg (II \times 2) -2/7.62-mm mg (I \times 2)

M: 2 Gray Marine 64 HN9 desels; 2 props; 450 hp Man: 6 tot.

Remarks: Transferred 3-67. Survivors of six. Unsuccessful design, supplanted by PBR in the U.S. Navy. Employed on upper Mekong River.

MINE WARFARE SHIPS

1 mine countermeasures support ship

Bldr In serv. Bangkok Naval DY 4-8-80 1 THALANG . . .

D: 1,000 tons (fl) S: 12 kts Dim: 55.7 × 10.0 × 3.1

A: 1/40-mm AA - 2/20-mm AA (I × 2) - 2/12.7-mm mg (I × 2) - mines

Electron Equipt: Radar: 1/Decca TM 1226

M: 2 MTU diesels; 2 props; 1,310 hp Man: 77 tot.

Remarks: Replaces Rang Kwien (11), stricken 1979. Designed by Ferostaal, Essen, Germany. Has two 3-ton cranes and carries four sets of spare mine countermeasures equipment for transfer to minesweepers.

♦ 0 (+2+2) new-construction minehunters

Bldr: Lürssen, Vegesack

L In serv. In serv. 1986 4-87

D: 448 tons (fi) S: 16 kts Dim: 48.00 (45.50 pp) × 3.30 × 2.56

A: 3/20-mm AA (I×3)

Electron Equipt: Radar: 1/. . . nav.

Sonar: Krupp-Atlas MNS-80

M: 2 MTU 12V396 TB83-DB51L diesels; 2 props; 2,940 hp

Range: 2,000/12 Man: 40 tot.

Remarks: First unit ordered 31-8-84, second (with option for two more) in 6-85. Wooden construction. Will carry two Gaymarine Pluto remote-controlled minehunting and disposal submersibles. May also have a 40-mm AA in addition to the arma-

◆ 4 ex-U.S. MSC 289-class minesweepers

| | Bldr | In serv. |
|--------------------------|------------------------------|----------|
| 5 Ladya (ex-MSC 297) | Peterson, Sturgeon Bay, Wis. | 14-12-63 |
| 6 Bangkeo (ex-MSC 303) | Dorchester SB, Camden, N.J. | 9-7-65 |
| 7 Tadindeng (ex-MSC 301) | Tacoma Boat, Wash. | 23-8-65 |
| 8 Don Chedi (ex-MSC 313) | Peterson, Sturgeon Bay, Wis. | 17-9-65 |



Bangkeo (6)

1967

D: 330 tons (362 fl) S: 13 kts Dim: 44.32 × 8.29 × 2.6

A: 2/20-mm AA (II × 1)

Electron Equipt: Radar: 1/Decca 707 Sonar: UQS-1D

D: 4 G.M. 6-71 diesels; 2 props; 1,000 hp (880 sust.)

Range: 2,500/10 Man: 7 officers, 36 men

Remarks: Transferred on completion. Wooden construction.

• 5 ex-U.S. 50-foot motor-launch minesweepers

MLMS 6 to MLMS 10

D: 21 tons (fl) S: 8 kts Dim: 15.29 × 4.01 × 1.31

A: Small arms only

M: 1 Navy DB diesel; 1 prop; 50 hp

Range: 150/8 Man: 6 tot.

Remarks: Transferred 1963-66. Wooden-hulled former personnel launches, converted before transfer.

AMPHIBIOUS WARFARE SHIPS

◆ 0 (+2+4) PS 700 Bldr: Ital-Thai SY, Samatprakarn

Laid down L In serv. . . . SICHANG . . . N.

D: 2,800 tons (fl) S: 15 kts Dim: 100.00 × 15.65 × 2.6

A: . . . Electron Equipt: Radar: . . .

M: 2 diesels; 2 CP props; 5,340 hp

Range: 4,000/14 Man: 35 crew + 240 troops

REMARKS: Details not certain. Reported to be same design as Libyan Ibn Ouf class, to be built under license from Chantiers du Nord et de la Mediterraneé, La Seyne, France. Two units authorized 7-84, with four more planned, to replace World War II-era

ex-U.S. units. Displacement also reported as 3,540 tons and engines as 2 MTU 20V1163 TB62 for 10,000 hp, 16 kts, and a range of 7,000 n.m. at 12 kts.

4 ex-U.S. LST 542-class tank-landing ships

| 2 Chang (ex-Lincoln Cty., LST 898) | Bldr Dravo, Pittsburgh | L 25-11-44 | In serv. 29-12-44 |
|--|---|---------------|----------------------|
| 3 Pangan (ex-Stark Cty., LST 1134) | Chicago Br. & Iron, Ind. | 16-3-45 | 7-4-45 |
| 4 Lanta (ex-Stone Cty., LST 1141) | Chicago Br. & Iron, Ind. | 18-4-45 | 9-5-45 |
| 5 Prathong (ex-Dodge Cty., LST 722) | Jeffersonville Br. & Mach. Co., Ind. | 21-8-44 | 13-9-44 |

D: 1,625 tons (4,080 fl) **S:** 11 kts **Dim:** 99.98 \times 15.24 \times 4.36 **A:** 8/40-mm AA (Π \times 2, Π \times 4)

Cargo capacity: 2,100 tons

M: 2 G.M. 12-567A diesels; 1,700 hp

Remarks: The Chang was transferred in 8-62, the Pangan in 5-66, the Lanta on 12-3-70. and the Prathong on 17-12-75. The Chang has a reinforced bow and waterline, originally intended for arctic navigation.

• 3 ex-U.S. LSM 1-class medium landing ships

Bldrs: Pullman Standard Car Mfg. Co., Chicago (3: Brown SB, Houston, Tex.)

| | Laid down | L | In serv. |
|---------------------|-----------|----------|----------|
| 1 Kut (ex-LSM 338) | 17-8-44 | 5-12-44 | 10-1-45 |
| 2 Phat (ex-LSM 333) | 13-7-44 | 27-10-44 | 25-11-44 |
| 3 Kram (ex-LSM 469) | 27-1-45 | 17-2-45 | 17-3-45 |



Kram (3)

D: 743 tons (1,095 fl) S: 12.5 kts Dim: 62.03 × 10.52 × 2.54 A: 2/40-mm AA (II × 1) (1, 2: 1/40-mm AA) — 4/20-mm AA (I × 4)

Electron Equipt: Radar: 1/Raytheon 1500B Pathfinder (3: 1/SPS-5)

M: 2 Fairbanks-Morse 38D81/8 diesels; 2 props; 2,800 hp

Range: 2,500/12 Man: 55 tot.

REMARKS: The Kut and Phai were transferred in 10-46, the Kram on 25-5-62. Kram has a Mk 51 Mod. 2 optical lead-computing director for the 40-mm guns.

♦ 1 ex-U.S. LCI(M) 351-class infantry-landing ship Bldr: Commercial Iron Works, Portland, Ore.

Laid down In serv. 2 SATAKUT (ex-LSIM 739) 30-1-44 27-2-44 6-3-44



Satakut (2)

G. Arra, 1980

1967

D: 231 tons (381 fl) S: 14 kts Dim: 48.46 × 7.21 × 1.73

A: 1/40-mm AA - 4/20-mm AA (I × 4)

Electron Equipt: Radar: 1/Raytheon 1500B

M: 8 G.M. 6-71 diesels; 2 CP props; 1,320 hp Electric: 40 kw Fuel: 113 tons Man: 53 tot.

Remarks: Originally one of 60 LCIL (later LSIL) converted to carry three 107-rnm chemical mortars, removed before transfer in 5-47. Now used as personnel landing craft. Sister Prab (ex-LCI(M) 739) exists as a hulk.

AMPHIBIOUS WARFARE SHIPS (continued)

♦ 1 ex-U.S. LSSL 1-class support landing craft Bldr: Commercial Iron Works, Portland, Ore.

Laid down In serv. 3 Nakha (ex-Himiwari, ex-LSSL 102) 3-2-45 17-2-45 13-1-45

D: 233 tons (387 fl) S: 14 kts Dim: 48.16 × 10.52 × 2.54

A: 1/76.2-mm DP Mk 22-4/40-mm AA (II × 2)-4/20-mm AA (I × 4)-4/12.7-mm mg (I × 4) -4/81-mm mortars (I × 4)

Electron Equipt: Radar: 1/Raytheon 1500B Pathfinder

M: 8 G.M. 6-71 diesels; 2 CP props; 1,320 hp Electric: 120 kw Fuel: 84 tons

Remarks: Transferred to Japan in 7-59 and to Thailand in 10-66 on return to U.S. control. Used mainly as a tender to small patrol craft.

Bldr: Bangkok Naval DY ♦ 4 (+1) Thong Kaeo-class utility landing craft

7 THONG KAEO (In serv. 23-12-82) 9 Wang Nok (In serv. 16-9-83) 8 Thonglang (In serv. 19-4-83) 10 Wang Nai (In serv. 11-11-83) 11 N. . .(In serv. . . .)

D: 200 tons (396 fl) S: 10 kts Dim: 41.0 × 9.0 × 2.1

A: 1/20-mm AA — 2/12.7-mm mg (I × 2)
M: 2 G.M. 16V71N diesels; 2 props; 1,400 hp Range: 1,200/10

Man: 3 officers, 29 men

Remarks: Based on U.S. LCU 1626 class. First four ordered 1980, fifth (with 2/20-mm AA) ordered 1984.

♦ 5 ex-U.S. LCU 501-class utility landing craft

| | Bldr | L | In serv. |
|--------------------------|---------------------------|---------|----------|
| 1 MATAPHON (ex-LCU 1260) | Quincy Barge, Ill. | 29-7-44 | 8-9-44 |
| 2 Rawi (ex-LCU 800) | Mt. Vernon Br. Co., Oh. | 14-6-44 | 16-6-44 |
| 3 Adang (ex-LCU 861) | Darby, Kansas City, Kans. | 15-2-44 | 22-2-44 |
| 4 PHE TRA (ex-LCU 1089) | Quincy Barge, Ill. | 10-5-44 | 10-6-44 |
| 6 Talibong (ex-LCU 753) | Quincy Barge, Ill. | 30-3-44 | 10-5-44 |

D: 134 tons (309 fl) S: 10 kts Dim: 36.3 × 9.96 × 1.14 A: 4/20-mm AA (II × 2) M: 3 G.M. 6-71 diesels; 3 props; 675 hp Fuel: 10.5 tons Range: 1,200/7 Man: 10 tot.

Remarks: Transferred 10-46 to 11-47. Used as logistics transports on the Chao Phraya river. Cargo: 150 tons. Sister Kolum (5, ex-LCU 904) stricken 1984.

◆ 24 ex-U.S. LCM(6)-class landing craft

L 14-16; L 61-68; L 71-78; L 81-82; L 85-87

D: 24 tons (56 fl) S: 9 kts Dim: 17.11 × 4.27 × 1.17

M: 2 Gray Marine 64 HN 9 diesels; 2 props; 330 hp Range: 130/9 Man: 5 tot.

Remarks: Transferred 2-65 to 4-69. Cargo capacity: 34 tons.

* 12 ex-U.S. LCVP-class landing craft

L 51-59; L 510-512

 D: 12 tons (fl)
 S: 9 kts
 Dim: 10.9 × 3.21 × 1.04
 M: 1 Gray Marine 64 HN 9 diesel; 1 prop; 225 hp Range: 110/9 Cargo capacity: 39 troops

Remarks: Transferred 3-63. Eight LCVPs are carried aboard the four Thai LSTs.

Bldr: Bangkok Dock Co. Ltd. (In serv. • 3 armored personnel transports 1984)

L 41 L 42

> D: . . . S: 25 kts Dim: 12.0 × . . . × . . . M: 2 Ford Sabre diesels; 2 props; . . . hp

Bldr: Royal Thai Navy Dockyard, Bangkok, 11-68 • 1 personnel landing craft

D: 10 tons (fl) S: 25 kts Dim: 12.0 × 3.0 × 1.0

M: 2 Chrysler diesels; 2 Castoldi model 6 waterjets; . . . hp

Cargo capacity: 35 troops

Remarks: Built with U.S. aid. Glass-reinforced plastic construction. Additional units may have been constructed.

HYDROGRAPHIC SHIPS

Bldr: Bangkok Navy DY 1 oceanographic and survey ship

L Laid down In serv. 16-9-81 3-9-82 . . . Suk 27-8-79

D: 1,400 tons (1,526 fl) S: 15 kts Dim: 62.9 × 11.0 × 4.1

A: 2/20-mm AA $(I \times 2) - 2/7.62$ -mm mg $(I \times 2)$ M: 2 MTU diesels; 2 props; 2,400 hp Man: 58 tot.

 1 navigational buoy tender Bldr: Royal Thai Naval DY, Bangkok (In serv. 18-1-79)

D: 690 tons light (960 fl) S: 12 kts Dim: 54.2 (47.3 pp) × 10.0 × 3.0 A: 2/20-mm AA (I×2) M: 2 MTU diesels; 1 prop; 1,310 hp

Electric: 300 kw Cargo capacity: 270 tons Range: 3,000/12 Man: 14 officers, 46 men

REMARKS: One 10-ton crane.

 1 oceanographic ship Bldr: C. Melchers, Bremen, W. Germany

Laid down L In serv. 11 CHANDHARA 27-9-60 17-12-60 1961



Chandhara (11)

1966

D: 870 tons (997 fl) S: 13 kts Dim: 70.0 (61.0 pp) × 10.5 × 3.0 A: 1/40-mm AA — 1/20-mm AA M: 2 Deutz diesels; 2 props; 1,000 hp Range: 10,000/12 Man: 72 tot.

Remarks: Built as a training ship.

Bldr: Lürssen, Vegesack, West Germany, 1956 · 2 inshore survey craft D: 96 tons (fl) S: 12 kts Dim: 29.0 × 5.5 × 1.5 M: 2 diesels; 2 props; . . . hp Man: 8 tot.

AUXILIARIES

• 1 small underway replenishment oiler

Bldr In serv. 24-9-80 Singapore SY & Eng. 1981

D: 2,000 tons (fl) S: 14 kts Dim: 67.0 × 9.5 × 4.35 Man: 7 officers, 32 men A: 2/20-mm AA (I×2) M: 2 MTU 12V396 TC62 diesels; 2 props; 2,400 hp

Remarks: 960 dwt. Cargo: 800 tons, transferred by means of an electrohydraulic boom supporting the hose.

Note: Transport Sichang (1) was stricken during 1984.

TRAINING SHIPS

♦ 1 ex-British Algerine-class former fleet minesweeper

Bldr: Redfern Const. Co., Toronto, Canada

Laid down In serv. 9-6-45 27-6-44 5-10-44 1 Phosamton (ex-Minstrel)



Phosamton (1)

1981

D: 1,010 tons (1,300 fl) S: 16 kts Dim: 68.58 × 10.82 × 3.28 A: 1/102-mm DP-1/40-mm AA-6/20-mm AA (II × 2, I × 2) Electron Equipt: Radar: 1/Raytheon 1500B Pathfinder, 1/. . . nav. M: 2 sets triple-expansion steam; 2 props; 2,400 hp Boilers: 2, 3-arum

Remarks: Transferred 4-47. Mechanical minesweeping equipment removed, replaced by a deckhouse to increase accommodations.

• 1 Tachin-class former frigate

Bldr: Uraga Dockyard, Japan

Laid dogwn In serv. 24-7-36 27-11-36 6-37 3 MAEKLONG

Fuel: 235 tons Range: 10,000/10 Man: 103 tot.

D: 1,400 tons (2,000 fl) S: 14 kts Dim: 112.5 × 10.5 × 3.2

A: 4/76.2-mm U.S. Mk 22 DP·(I × 4) -3/40-mm AA (I × 3) -3/20-mm AA $(I \times 3)$ - mines

M: 2 sets triple-expansion reciprocating steam; 2 props; 2,500 hp Boilers: 2, watertube Fuel: 487 tons Range: 8,000/12 Man: 155 tot.

TRAINING SHIPS (continued)



Maeklong (3)

R.A.N., 3-82

REMARKS: Sister Tachin bombed in 1945 and discarded circa 1950. Formerly carried four 102-mm guns (replaced in 1974) and four 450-mm torpedo tubes (II × 2).

Note: Training ship Bangpakong (4, ex-Indian Gandwana, ex-HMS Burnet), the last World War II "Flower"-class corvette in original configuration, was stricken during 1984.

SERVICE CRAFT

♦ 2 Proet-class harbor oilers Bldr: Royal Thai Navy DY, Bangkok

In serv. In serv. YO 9 PROET 16-1-70 YO 11 SAMED 15-12-70



Samed (11) - while fitting out

1967

D: 360 tons (465 fi) **S:** 9 kts **Dim:** 39.0 (36.6 pp) \times 6.1 \times 3.1 **A:** 2/20-mm AA (I \times 2) **M:** 1 diesel; 500 hp

• 2 provisions transport

Bldr:. . .

AF 7 KLED KEO



Kled Keo (7)

1967

D: 382 tons (450 fl) S: 12 kts Dim: 46.0 × 7.6 × 4.3 A: 3/20-mm AA (I × 3) M: 1 diesel; 600 hp Man: 54 tot. Remarks: Former trawler. Acquired in 1967.

• 1 Charn-class water tanker

Bldr: Bangkok Naval DY

YW 8 CHUANG (L: 14-1-65)

D: 355 tons (485 fl) S: 11 kts Dim: 42.0 × 7.5 × 3.1 A: 1/20-mm AA M: 1 G.M. diesel; 500 hp Man: 29 tot...

REMARKS: Near sister Charn stricken during 1984.

◆ 2 Rang-class coastal tugs Bldr: Singapore SB & Eng. (In serv. 9-80)

. . . Rang (L: 12-6-80) . . . Rin (L: 14-6-80)

D: 250 tons (300 fl) S: 12 kts Dim: 32.3 × 9.0 × . . . M: 1 MWM TBD 441V/12K diesel; 1 prop; 2,100 hp Electric: 233 kw Range: 1,000/10 Man: 16 tot.

REMARKS: Bollard pull: 22 tons

 2 ex-Canadian small harbor tugs tario (In serv. 1943-44) Bldr: Central Bridge Co., Trenton, On-

YTL 2 Klueng Baden YTL 3 Marin Vichai

D: 63 grt S: 8 kts Dim: 19.8 × 5.0 × 1.8 M: 1 diesel; 240 hp

Remarks: Acquired in 1953.

ROYAL THAI MARINE POLICE

This organization performs duties analogous to those of a coast guard and operates a large number of patrol boats and craft. A number of the newer and larger units are listed below. Two "offshore" patrol boats were ordered in 1981 from C.N. Breda, Venice, Italy; no further details announced.

PATROL BOATS AND CRAFT

• 2 (+ . . .) new construction Bldr: Tecnautic, Bangkok (In serv. 1984-. . .)

D: . . . S: 27 kts Dim: 27.00 × 5.85 × . . .

A: . . . M: 3 Isotta-Fraschini diesels; 3 Castoldi 07 waterjets; 2,500 hp

• 5 new construction Bldr: Tecnautic, Bangkok (In serv. 1983)

D: . . . S: 26 kts Dim: 18.00 × 4.45 × . .

A: . . . M: 2 Isotta-Fraschini diesels; 2 Castoldi 07 waterjets; 1,260 hp

Remarks: The same yard has also recently built a number of smaller waterjet-driven launches and landing craft for the Royal Thai Marine Police.

♦ 8 aluminum-hulled Bldr: Captain Co., Thailand (In serv. 1978)

D: 18 tons (fl) S: 22 kts Dim: 16.5 × 3.8 × . . . A: 2/12.7-mm mg M: 2 Cummins diesels; 400 hp

♦ 3 U.S. Cutlass class Bldr: Halter Marine, New Orleans, La. (In serv. 1978)

807 Phra Ong Chao Khamrop 808 Picharn Pholakit 809 Ram Inthra



Phra Ong Chao Khamrop and sisters—with old numbers

Halter, 1978

D: 34 tons (fl) S: 25 kts Dim: 19.66 × 5.18 × 1.12 A: 2/12.7-mm mg (I × 2) M: 2 G.M. 12V71 TI diesels; 2 props; 960 hp Fuel: 2.7 tons Man: 15 tot.

♦ 1 seagoing patrol boat Bldr: Yokohama Yacht, Japan (In serv. 1975)

1802 Damrong Rachanuphat (ex-112)

D: 200 grt S: 31 kts Dim: 37.0 × 6.5 × . . . A: 1/76.2-mm DP — 2/20-mm AA M: 4 diesels; 2 props; 2,200 hp

2 seagoing patrol boats

1801 N. 1803 N.



1803

1983

D: Approx. 400 tons (fl) A: 1/40-mm AA - 2/20-mm AA

M: Diesel-powered

Note: There are a number of other craft, mostly armed with either one 20-mm antiaircraft or two 12.7-mm machine guns. Most craft are Japanese built.

Republic of Togo

Personnel (1985): 200 men

MERCHANT MARINE (1984): 8 ships - 29,980 grt

PATROL BOATS

* 2 wooden-hulled

Bldr: C. N. de l'Estérel, Cannes, France

KARA (L: 18-5-76)

Mono (L: 1976)



Mono

French Navy, 12-82

D: 80 tons (fl) S: 30 kts Dim: 32.0 × 5.8 × 1.5 A: 1/40-mm AA — 1/20-mm AA Electron Equipt: Radar: 1/Decca 916 M: 2 MTU 12V493 diesels; 2,700 hp Range: 1,500/15

Man: 1 officer, 17 men

Merchant Marine (1984): .20 ships - 16,308 grt

MARITIME DEFENSE DIVISION TONGAN DEFENSE SERVICE

PATROL BOATS AND CRAFT

♦ 0 (+1) ASI 315 design Bldr: Australian SB Ind. (WA) Pty, Ltd, South Coogie, West Australia

. . . N. . . (In serv. 1987)

D: 165 tons (fl) S: 20 kts (sust.) Dim: 31.50 (28.60 wl) × 8.10 × 2.12

A: 2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/Furuno 1011

M: 2 Caterpillar 3516 diesels; 2 props; 2,400 hp (sust.) Range: 2,500/12 Fuel: 33 tons Electric: 120 kw

Endurance: 10 days Man: 3 officers, 14 men

Remarks: "Pacific Patrol Boat" design winner for Australian foreign aid program; ordered 5-85. Illustration in Papua New Guinea section.

Bldr: Brooke Marine, Lowestoft, U.K. • 2 fiberglass-hulled

P 101 NGAHAU KOULA (In serv. 10-3-73) P 102 NGAHAU SILIVA (In serv. 10-5-74)

 $\begin{array}{lll} \textbf{D:} \ \ 15 \ tons \ (fl) & \textbf{S:} \ \ 21 \ kts \\ \textbf{A:} \ \ 2/12.7\text{-mm mg} \ (I \times 2) & \textbf{Electron Equipt:} \ \ Radar: \ 1/Decca \ 101 \end{array}$

M: 2 Cummins KT2300M diesels; 2 props; 700 hp Range: 800/21 Man: 7 tot.

AUXILIARIES

♦ 1 Australian-built U.S. LCM (8)-class landing craft Bldr: North Queensland Eng., Cairns

LATE (ex-Australian Army 1057)

D: 34 tons light (116 fl) S: 12 kts Dim: 22.70 × 6.41 × 1.37 M: 2 G.M. 12V71 diesels; 2 props; 600 hp Range: 200/9

REMARKS: Transferred to Tongo 1-9-82. Cargo: 55 tons. Has been fitted with a pilothouse and navigational radar.

4 1 royal yacht

TITILUPE

Remarks: 10.4-m glass-reinforced plastic craft capable of 8 kts.; also used in patrol

TRINIDAD

Republic of Trinidad and Tobago

Personnel (1985): 45 officers, 541 men

MERCHANT MARINE (1984): 49 ships - 18,969 grt

NAVAL AVIATION: The Coast Guard operates one Twin Beech maritime surveillance aircraft and one Cessna light aircraft. The Air Division of the National Security Forces operates 2 SA.341G Gazelle and 2 Sikorsky S-76 helicopters for surveillance and rescue service.

COAST GUARD

PATROL BOATS AND CRAFT

• 2 CG 40 class

Bldr: Karlskrona, Sweden (Both in serv. 6-6-80)

CG 5 BARRACUDA

CG6 CASCADURA



Barracuda (CG 5)

L. & L. Van Ginderen, 1-84

D: 200 tons (fl) S: 31 kts Dim: $40.6\times6.7\times1.6$ A: 1/40-mm Bofors AA — 1/20-mm AA

Electron Equipt: Radar: 1/Decca TM 1226

M: 2 Paxman Valenta 16RP200 diesels; 2 props; 8,000 hp

Range: 2,000/15-20 Man: 22 tot.

Remarks: Ordered 8-78. Have an optronic GFCS for the 40-mm AA; rescue dinghy carried on stern. 27 kts sustained speed. Have HF and VHF D/F gear.

♦ 4 103-foot Bldr: Vosper, Portsmouth

CG 3 CHAGUARAMAS 18-2-72 CG 1 TRINITY 14-4-64 20-2-65 29-3-71 20-5-64 20-2-65 1971 18-3-72 CG 2 COURLAND BAY CG 4 Bucco Reef



Bucco Reef (CG 4)

Trinidad & Tobago CG, 1982

D: 96–100 tons (123–125 ft) **S:** 23 kts **Dim:** 31.29 (28.95 pp) \times 5.94 \times 1.68 **A:** CG 1 and CG 2: 1/40-mm AA; CG 3 and CG 4: 1/20-mm AA M: 2 Paxman 12 YJCM Ventura diesels; 2 props; 2,900 hp

Remarks: Second pair are heavier and have slightly longer range: 2,000/13; their superstructures are broader. All are air-conditioned and have roll-damping fins.

Fuel: 18 tons Range: 1,800/13.5 Man: 3 officers, 14 men

TRINIDAD AND TOBAGO (continued) PATROL BOATS AND CRAFT (continued)

 4 Wasp 17-m-class patrol craft serv. 27-8-82) Bldr: W.A. Souter & Sons, Cowes, U.K. (In

CG 27 PLYMOUTH CG 28 CARONI

CG 29 GALEOTA

CG 30 MORUGA



Plymouth (CG 27)

L. & L. Van Ginderen, 1-84

D: 19.25 tons (fl) S: 28 kts (25 sust.) Dim: 16.76 (13.90 wl) × 4.20 × 1.40 A: 2/7.62-mm mg (I × 2) Electron Equipt: Radar: 1/Decca 150 M: 2 Stevenson-G.M. 8V92 MTI diesels; 2 props; 1,300 hp Range: 500/18 Man: 2 officers, 4-6 men

Remarks: Glass-reinforced plastic construction. Ordered 8-81.

◆ 2 coastal patrol craft Bldr: Tugs & Lighters, Ltd., Port-of-Spain CG 01 Naparima (In serv. 15-8-76) CG 25 EL Tucuche (In serv. 1977)

D: 20 tons S: 20 kts Dim: 16.4 × 5.2 × 2.6

M: 2 G.M. 6V71 diesels; 2 props; 460 hp Man: 6 tot.

Remarks: Dissimilar craft in appearance. CG 25 is 16.7 m o.a.

◆ 1 fiberglass patrol launch Bldr: Trinidad (In serv. . . .)

CG 9 FORT CHACON

D: . . . S: 27 kts Dim: 7.0 × . . . × M: 1 Caterpillar diesel; . . . hp

• 1 sail-training ketch Bldr: Trinidad, 1966

Hummingbird II

REMARKS: 12 meters overall, one 3-cylinder Lister auxiliary diesel.

MARINE POLICE

PATROL CRAFT

◆ 2 Wasp 20-m class Bldr: W.A. Souter & Sons, Cowes (In serv. 11-82)

N. N.

D: 32 tons (fl) S: 36 kts (30 sust.) Dim: 20.0 × 5.0 × 1.5 A: 2/7.62-mm mg (I × 2) Electron Equipt: Radar: 1/Decca 150 M: 2 G.M. 16V92 TI diesels; 2 props; 2,400 hp Range: 300/30 Man: 2 officers, 4 men

REMARKS: Aluminum hulls. Ordered 30-9-81.

1 fiberglass-hulled Bldr: Watercraft, Shoreham, U.K. (In serv. 1980)

SEA DRAGON

D: 14.9 tons (fl) S: 23.5 kts Dim: 13.7 × 4.1 × 1.2 A: 2/7.62-mm mg (I × 2) Electron Equipt: Radar: 1/Decca 110 M: 2 G.M. 8V92 diesels; 12 props; 700 hp Range: 360/20 Man: 4 tot.

• 2 Sword class Bldr: Fairey Marine, Hamble, U.K.

Sea Spray (In serv. 1-78) Fox (In serv. 12-78)

D: 15.2 tons (fl)
 S: 28 kts
 Dim: 13.7 × 4.1 × 1.32
 A: 1/7.62-mm mg
 M: 2 G.M. 8V71 TI diesels; 2 props; 850 hp
 Range: 500/. . . Man: 6 tot.

TUNISIA

Republic of Tunisia

Personnel (1985): approx. 2,600 men

Merchant Marine (1984): 63 ships - 277,403 grt (tankers: 9 ships - 168,719 grt)

FRIGATE

 1 ex-U.S. Savage-class former radar picket Bldr: Consolidated Steel, Orange, Tex.

E 7 President Bourguiba (ex-Thomas J. Gary, 15-6-43 21-8-43 27-11-43 DER 326, ex-DE 326)



President Bourguiba (E 7)

French Navy, 7-80

D: 1,590 tons (1,850 fl) S: 19 kts Dim: 93.27 (91.5 pp) × 11.22 × 4.27 A: 2/76.2-mm DP (I × 2) -2/20-mm AA (I × 2) -6/324-mm ASW TT (III × 2) Electron Equipt: Radar: 1/SPS-10, 1/SPS-29, 1/Mk 34 Sonar: SQS-29 series

M: 4 Fairbanks-Morse 38D8% × 10 diesels; 2 props; 6,080 hp Fuel: 310 tons Electric: 580 kw Range: 11,500/11 Man: 160-170 tot.

REMARKS: Modified as a radar picket ship in 1957, transferred on 27-10-73. SPS-8 height-finding radar, TACAN, EW, Hedgehog removed about 1968. Has one Mk 63 radar GFCS and one Mk 51 Mod. 2 GFCS for 76.2-mm guns. A replacement is being sought.

GUIDED-MISSILE PATROL BOATS

| ♦ 3 Combattante III class | | Bldr: CMN | I, Cherbour | |
|---------------------------|-----------|-----------|-------------|--|
| | Laid down | L | In serv. | |
| P 501 La Galite | 26-5-82 | 16-6-83 | 27-2-85 | |
| P 502 Tunis | 28-9-82 | 27-10-83 | 28-3-85 | |
| P 503 CARTHAGE | 6-1-83 | 24-1-84 | 29-4-85 | |



La Galite (P 501)

35th Flot., French Navy, 5-85

D: 395 tons (425 fl) S: 38.5 kts Dim: 56.80 (53.00 pp) × 8.16 × 2.15 (2.50 props)

A: 8/MM 40 Exocet SSM (IV \times 2) — 1/76-mm OTO Melara DP — 2/40-mm Breda AA (II \times 2) — 4/30-mm Oerlikon AA (II \times 2)

Electron Equipt: Radar: 1/Castor IIB, 1/Triton S

EW: . . . passive, 1/Dagaie Chaff RL M: 4 MTU 20V538 TB93 diesels; 4 props; 19,300 hp Electric: 405 kVA Man: 35 tot.

Remarks: Ordered 27-6-81. Have Thomson-CSF Vega II control system for missiles, 76-mm and 40-mm guns; two CSEE Naja optronic directors for the 30-mm AA.

PATROL BOATS AND CRAFT

◆ 3 French P 48 class Bldr: SFCN, Villeneuve-la-Garenne

L In serv.

P 301 BIZERTE 20-11-69 10-7-70

P 302 Horria (ex-*Liberty*) 19-2-70 10-70 P 304 Monastir 25-6-74 25-3-75

PATROL BOATS AND CRAFT (continued)



Monastir (P 304)

G. Gyssels, 10-82

D: 250 tons (fl) **S:** 22 kts **Dim:** 48.0 (45.5 pp) \times 7.1 \times 2.25

A: 2/40-mm AA $(I \times 2) - 2/20$ -mm AA $(I \times 2) - 8/SS-12$ wire-guided missiles

Electron Equipt: Radar: 1/Decca TM 1226

M: 2 MGO MB-839 Db diesels; 2 props; 4,000 hp Range: 2,000/16

Man: 4 officers, 30 men

REMARKS: P 301 lacks the 20-mm AA.

Bldr: Dubigeon, Nantes (In serv. 12-3-57) ♦ 1 French Le Fougueux class

P 303 Sakiet Sidi Youssef (ex-UW 12, ex-PC 1618)



Sakiet Sidi Youssef (P 303)

French Navy, 7-80

D: 325 tons (402 fl) **S:** 18.7 kts **Dim:** $53.1 \times 6.4 \times 2.1$ (3.0 max.)

A: 1/40-mm AA - 2/20-mm AA (I × 2) - 2/Mk 20 Mousetrap ASW RL - 2/Mk 9 d.c. racks

Electron Equipt: Radar: 1/DRBN-31 Sonar: DUBA-2

M: 4 SEMT-Pielstick 14 PA17V diesels; 2 CP props; 3,240 hp Electric: 60 kw Fuel: 45 tons Range: 3,300/15; 6,350/12 Man: 4 officers, 59 men

Remarks: Begun as P 7 for the French Navy, using U.S. "Offshore" funds. Transferred to West Germany and used as a training ship at the Underwater Weapons School. Purchased by Tunisia on 16-6-70. Four depth-charge projectors and Hedgehog removed mid-1970s.

♦ 2 ex-U.S. Adjutant-class former coastal minesweepers

| | | Bldr | In serv. |
|---|-------------------------------------|--------------------|----------|
| P | Hannibal (ex-Coquelicot, ex-MSC 48) | Steven Bros., Cal. | 10-53 |
| P | Sousse (ex-Marjolaine, ex-MSC 66) | Harbor Boat, Cal. | 4-53 |



Hannibal

J.-C. Bellonne, 1973

D: 300 tons (372 fl) S: 13 kts Dim: 43.0 (41.5 pp) × 7.95 × 2.55 A: 2/20-mm AA (II × 1) Electron Equipt: Radar: 1/DRBN-31

M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp

Fuel: 40 tons Range: 2,500/10

Man: 3 officers, 35 men

Remarks: Loaned in 1973 and 1977. Minesweeping gear removed. Used in fisheriesprotection duties.

Bldr: Vosper Thornycroft, Portchester, U.K. 2 103-foot class

In serv. P 205 TAZARKA 19-7-76 27-10-77 P 206 MENZEL BOURGUIBA 19-7-76 27-10-77

D: 100 tons (125 fl) S: 27 kts Dim: 31.29 (28.95 pp) × 6.02 × 1.98 A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca 916 M: 2 MTU diesels; 2 props; 4,000 hp Range: 1,500/14 Man: 24 tot.

◆ 2 Chinese Shanghai-II class (In serv. 2-5-77)

P 305 Gafsa P 306 AMILCAR



Gafsa (P 305)

D: 122.5 tons (135 fl) S: 28.5 kts Dim: $38.78\times5.41\times1.55$ A: 4/37-mm AA (II \times 2) — 4/25-mm AA (II \times 2)

Electron Equipt: Radar: 1/. . . nav.

M: 4 MTU 9V331 TC92 diesels; 4 props; 4,260 hp (3,540 sust.)

Range: 800/17 Man: 38 tot.

REMARKS: Re-engined and refitted at SOLOMENA SY, Bizerte, completing 12-84.

• 4 French 32-meter class Bldr: CN de l'Estérel, Cannes

In serv. In serv. P 201 ISTIKLAL (ex-French VC 11) 1957 P 203 AL JALA 11-63 P 202 JOUMHOURIA P 204 REMADA 1-61 7-67



Istiklal (P 201)

V 101 through V 106

1970

D: 60 tons (82 fl) S: 28 kts Dim: 31.45 × 5.75 × 1.7 A: 2/20-mm AA (I × 2) M: 2 MTU 12V493 diesels; 2 props; 2,700 hp Range: 1,400/15 Man: 3 officers, 14 men

Remarks: Wooden construction. P 201 was launched on 25-5-57 and transferred in 3-59.

 6 French 25-meter class Bldr: CN de l'Estérel, Cannes (In serv. 1961-63)

V 101

L. & L. Van Ginderen, 1984

D: 38-39 tons S: 23 kts Dim: 25.0 × 4.75 × 1.25 Man: 10 tot. A: 1/20-mm AA M: 2 G.M. 12V71 TI diesels; 2 props; 940 hp Range: 900/16

Remarks: V 107 and V 108 were transferred to the Fisheries Administration, disarmed, in 1971, as Sabeq el Bahr (T 2) and Jaouel el Bahr (T 3).

TUNISIA (continued)

AUXILIARY SHIPS

1 ex-U.S. Sotoyomo-class oceangoing tug

Bldr: Gulfport Boilers & Welding Works, Port Arthur, Tex.

Laid down L In serv.

- . . Ras Adar (ex-Zeeland, ex-Pan America, ex-Ocean Pride, ex-Oriana, ex-BAT 1)

Laid down L In serv. 15-8-42 13-12-42

D: 570 tons (835 fl) S: 13 kts Dim: 43.59 (41.0 pp) × 10.31 × 4.01 A: None M: 2 G.M. 12-278A diesels, electric drive; 1 prop; 1,500 hp Electric: 90 kw Fuel: 171 tons Man: 45 tot.

Remarks: Built under Lend-Lease, transferred to Great Britain on 22-12-42. Returned and sold commercially in 1946. Purchased for Tunisia from Dutch company in late 1960s. BAT-series had larger superstructure than standard *Sotoyomo* class and were considered to be ocean rescue tugs.

♦ 1 diving tender (In serv. 1948)

KERKENNAH

D: 653 grt S: 10 kts Dim: 53.95 × 9.75 × 2.75

M: Diesel-electric; . . . props; . . . hp Man: 4 officers, 20 men, 4 civilians

TURKEY

Republic of Turkey

Personnel (1985): 45,000 men

Merchant Marine (1984): 776 ships - 3,124,784 grt

(tankers: 93 ships - 1,294,218 grt)

Naval Aviation: A small naval air arm, organized in 1972, consists of 8 S-2A and 12 S-2E Tracker ASW airplanes, 3 AB-204 helicopters, and 9 AB-212 helicopters.

Warships In Service, Authorized, Or Under Construction As Of 1 January 1986

| ◆ 17 (+7) submarines | L | Tons | Main armament |
|---------------------------|---------|------------|--|
| | | (surfaced) | |
| 5 (+7) Type 209 | 1974-81 | 990 | 8/533-mm TT |
| 2 Tang | 1951 | 2,100 | 8/533-mm TT |
| 2 GUPPY III | 1945 | 1,975 | 10/533-mm TT |
| 7 GUPPY II-A | 1943-44 | 1,848 | 10/533-mm TT |
| 1 GUPPY I-A | 1944 | 1,870 | 10/533-mm TT |
| • 14 destroyers | | Tons | |
| 2 CARPENTER | 1945-46 | 2,425 | 2/127-mm 1/ASROC, 6/ASW TT |
| 7 GEARING FRAM-I | 1944-46 | 2,425 | 4/127-mm, 1/ASROC, 6/ASW TT |
| 2 Gearing Fram-II | 1945 | 2,390 | 4/127-mm, 2/35-mm AA, 1/Hedge- hog, 6/ASW TT |
| 1 ALLEN M. SUMNER FRAM-II | 1944 | 2,200 | 6/127-mm 6/ASW TT |
| 1 Robert H. Smith | 1944 | 2,250 | 6/127-mm, 2/76.2-mm, mines |
| 2 FLETCHER | 1943 | 2,050 | 4/127-mm, 6/76.2-mm, ASW weapons |
| ♦ 4 (+4) frigates | | | |
| 0 (+4) Меко 200 | * * * | 2,000 | 8/Harpoon SSM, Albatros SAM, 1/127-mm DP, ASW weapons |
| 2 Berk | 1971-72 | 1,450 | 4/76.2-mm, 6/ASW TT |
| 2 Köln | 1959 | 2,425 | 2/100-mm, ASW weapons, mines |

- 53 patrol and torpedo boats
- 48 mine warfare ships and craft
- ♦ 51 (+ . . .) seagoing landing ships and craft

WEAPONS AND SYSTEMS

Most weapons and systems are furnished by the U.S.A., some by West Germany. For characteristics, see the sections on the U.S.A. and Germany, Federal Republic. Twelve Harpoon SSM were ordered in 1981 to supplement existing stocks; Norwegian Penguin Mk 1 missiles are also used. British Sea Skua anti-ship missiles may be purchased for use by AB-212 helicopters.

SUBMARINES

| ◆ 5 (+7) German Type 209 350 and later: Gölcük NSY | Bldrs: S 347, S 348, S 349; Howaldtswerke, Kiel; |
|---|--|
|---|--|

| | Laid down | L | In serv. |
|----------------|-----------|----------|----------|
| S 347 ATILAY | 1-12-72 | 23-10-74 | 23-7-75 |
| S 348 SALDIRAY | 2-1-73 | 14-2-75 | 21-10-75 |
| S 349 BATIRAY | 11-6-75 | 24-10-77 | 20-7-78 |
| S 350 YILDIRAY | 1-5-76 | 20-7-77 | 20-7-81 |
| S 351 DOGANAY | 21-3-80 | 16-11-83 | 16-11-84 |
| S 352 TITIRAY | 9-3-81 | | |
| S N | | | |



Yildiray (S 350) — with Ikinci Inönü (S 333), Canakkale (S 341), Atilay (S 347), and Birinci Inönü (S 346) beyond H. Ehlers, 3-84

D: 990 tons std./1,180 tons surf./1,290 sub. S: 11/22 kts

Dim: 56.10 × 6.20 × 5.50 A: 8/533-mm TT fwd (14 torpedoes)

Electron Equipt: Radar: . .

Sonar: Krupp-Atlas AN526 passive/AN407AS active, DUUX-2 telephone

M: 4 MTU 12V493 TY60 diesels (600 hp each); 4/405-kw generator sets; 1

Siemens electric motor, 5,000 hp Fuel: 100 tons Range: 7,800/8 surf.; 400/4 sub.

Man: 6 officers, 27 men

Remarks: Have H.S.A. M8 torpedo-fire control, two periscopes. A total of 12 are planned, with 8 to be built in Turkey.

♦ 2 ex-U.S. Tang class Bldr: Portsmouth Naval SY, N.H.

| | Laid down | L | In serv. |
|---|-----------|---------|----------|
| S 343 Piri Reis (ex-Tang, SS 563) | 18-4-49 | 19-6-51 | 25-10-52 |
| S 344 HIZIR REIS (ex-Gudgeon, SSAG 567) | 20-5-50 | 11-6-52 | 21-11-52 |



Piri Reis (S 343)

L. & L. Van Ginderen, 6-82

D: 1,975/2,600 tons **S**: 15.5/16 kts **Dim**: 87.5 × 8.3 × 5.7

A: 8/533-mm TT (6 fwd, 2 short aft)

Electron Equipt: Radar: 1/BPS-12, 1/ST-3

Sonar: BQS-4, BQG-4 (PUFFS)

M: 3 Fairbanks-Morse 38D8% \times 10 diesels; 2 Westinghouse motors; 2 props; 5,600 hp

Range: 7,600/15; 17/9 submerged Man: 11 officers, 75 men

Remarks: S 343 leased for five years 8-2-80, ex-SSAG 567 leased 30-9-83. Have Mk 106, Mod. 18, torpedo FCS. Aft tubes can fire Mk 37 torpedoes only.

♦ 2 ex-U.S. GUPPY III class Bldr: Electric Boat Co., Groton, Conn.

Laid down L In serv. S 333 Ikinci Inonu (ex-Corporal, SS 346) 27-4-44 1-4-45 8-8-45 S 341 Canakkale (ex-Cobbler, SS 344) 3-4-44 1-4-45 9-11-45

D: 1,975/2,450 tons S: 17.2/14.5 kts Dim: 99.52 × 8.23 × 5.18

A: 10/533-mm TT (6 fwd, 4 aft) - 24 torpedoes

Electron Equipt: Radar: 1/SS-2A — Sonar: BQG-4 (PUFFS), BQR-2B M: 4 G.M. 16-278A diesels (1,625 hp each), diesel-electric drive; 2 props; 6,500/5,200 hp

Range: 10,000-12,000/10; 95/5 (sub.) Man: 86 tot.

Remarks: Transferred on 21-11-73. Lengthened by 3.6 meters in 1962 at Philadelphia (S 341) and Charleston (S 333). Two 126-cell batteries. Direct drive on surface.



Canakkale (S 341) — showing PUFFS domes, with Atilay (S 347) and Birinci Inönü (S 346) in background H. Ehlers, 3-84

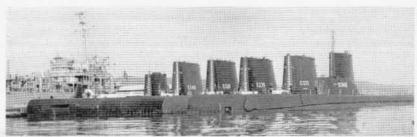
• 7 ex-U.S. GUPPY II-A Bldrs: S 345: Electric Boat Co., Groton, Conn.; others: Portsmouth NSY

| | Laid down | L | In serv. |
|--|-----------|----------|----------|
| S 335 Burak Reis (ex-Sea Fox, SS 402) | 2-11-43 | 28-3-44 | 13-6-44 |
| S 336 MURAT REIS (ex-Razorback, SS 394) | 9-9-43 | 27-1-44 | 3-4-44 |
| S 337 ORUÇ REIS (ex-Pomfret, SS 391- | 17-7-43 | 27-10-43 | 19-2-44 |
| S 338 ULUÇ ALI REIS (ex-Thornback, SS 418) | 5-4-44 | 7-7-44 | 13-10-44 |
| S 340 Cerbe (ex-Trutta, SS 421) | 22-5-44 | 18-8-44 | 16-11-44 |
| S 345 Preveze (ex-Entemedor, SS 340) | 3-2-44 | 17-12-44 | 6-4-45 |
| S 346 Birinci İnönü (ex-Threadfin, SS 410) | 18-3-44 | 26-6-44 | 30-8-44 |



Murat Reis (S 336)

H. Ehlers, 3-82



Cerbe (S 340) — showing "stepped" sail, outboard Burak Reis (S 335), Dumlupinar (S 339), Murat Reis (S 336), Birinci Inōnū (S 346), Piri Reis (S 343), and tender Besaran (A 582) H. Ehlers, 2-83

D: 1,525/1,848/2,440 tons S: 17.4/14 kts, 9.4 snorkel

Dim: 93.36 × 8.32 × 5.04

A: 10/533-mm TT (6 fwd, 4 aft) - 24 torpedoes or 40 mines

Electron Equipt: Radar: 1/SS-2A

Sonar: BQR-2B, BQS-4

M: 3 Fairbanks-Morse 38D8% × 10 (S 345; G.M. 16/278A) diesels, electric drive; 2 props; 3,430/5,200 hp

Fuel: 330 tons Range: 10,000/10; 95/5 (sub.)

Man: 8-9 officers, 76 men

Remarks: S 335 was transferred in 12-70, S 336 in 11-70, S 337 on 3-5-72, S 338 and S 345 on 24-8-73, S 340 in 6-72, and S 346 on 15-8-73. S 336 and S 338 were at one time while in U.S. service equipped as "hard" targets for ASW training. S 340 is the only operational ex-USN GUPPY to retain the original stepped sail.

• 1 ex-U.S. GUPPY I-A class Bldr: Electric Boat Co., Groton, Conn.

Laid down L In serv. 1-10-43 30-3-44 17-7-44

D: 1,517/1,870/2,400 tons S: 18/15 kts Dim: 93.75 × 8.33 × 5.04

A: 10/533-mm TT (6 fwd, 4 aft) -24 torpedoes or 40 mines

Electron Equipt: Radar: 1/SS-2A

S 339 DUMLUPINAR (ex-Caiman, SS 323)

Sonar: . . .

M: 4 G.M. 16-278A diesels, diesel-electric direct drive; 2 props; 4,610/5,200 hp Fuel: 330 tons Range: 16,000/10; 95/5 sub. Man: 9 officers, 76 men



Dumlupinar (S 339)

L. & L. Van Ginderen, 6-82

REMARKS: Completed GUPPY I-A conversion in 1951. Transferred 24-8-72. Had been relegated to pierside training duties after collision with a Soviet freighter on 1-9-76 and a fire in 1977, but refitted and recommissioned during 1980. Two 126-cell batteries.

DESTROYERS

♦ 2 ex-U.S. Carpenter class

Bldr Laid down In serv. D 346 ALCITEPE (ex-Robert A. Bath Iron Works, 29-10-45 15-7-46 5-11-49 Bath, Maine Owens, DD 827) Consolidated Steel, D 347 ANITEPE (ex-Gemlik, 30-7-45 30-12-45 15-12-49 ex-Anitepe, ex-Carpenter, Orange, Tex. DD 825)



Anitepe (D 347)

Pradignac & Leo, 1984

D: 2,425 tons (3,540 fl) S: 34 kts Dim: $119.03 \times 12.52 \times 4.61$ (6.4 over sonar) A: 2/127-mm DP (II \times 1) -2/76.2-mm Mk 3 DP (II \times 1) -2/35-mm Oerlikon AA (II \times 1) -1/ASROC ASW RL (VIII \times 1, 6 reloads) -6/324-mm Mk 32 ASW TT (III \times 2) -1/d.c. rack (9 dlc.)

Electron Equipt: Radar: 1/. . . nav., 2/8PS-10, 1/8PS-40, 1/Mk 35 Sonar: SQS-23

M: 2 sets G.E. GT; 2 props; 60,000 hp Electric: 1,200 kw Boilers: 4 Babcock & Wilcox; 43.3 kg/cm², 454 °C Fuel: 720 tons Range: 1,500/31; 5,800/12 Man: 14 officers, 260 men

Remarks: D 347 purchased 20-2-81, ex-DD 827 purchased 16-2-82. Name for D 347 changed two weeks after transfer. Variant of the *Gearing* design, originally optimized for ASW. Completed FRAM-I modernizations 1962, retaining high bridges. Have Mk 56 radar GFCS, tripod mast aft, larger hanger superstructure than *Gearing* FRAM-I. Twin 76.2-mm placed on fantail, twin 35-mm forward after transfer, GFCS for the 35-mm mount not identified.

♦ 7 ex-U.S. Gearing FRAM-I class

DD 872)

| | Bldr | Laid down | L | In serv. |
|--|-------------------------------------|-----------|---------|----------|
| D 345 YUCETEPE (ex-Orleck, DD 886) | Consolidated Steel, Orange, Tex. | 18-11-44 | 12-5-45 | 15-9-45 |
| D 348 Savastepe (ex-Meredith, DD 890) | Consolidated Steel, Orange, Tex. | 27-1-45 | 28-6-45 | 31-12-45 |
| D 349 Kiliç Ali Paşa (ex-Robert H. McCard, DD 822) | Consolidated Steel, Orange, Tex. | 26-1-45 | 9-11-45 | 26-10-46 |
| D 350 PIYALE PAŞA (ex-Fiske, DD 842) | Bath Iron Wks., Bath, Maine | 9-4-45 | 8-9-45 | 28-11-45 |
| D 351 M Fevzi Cakmak (ex-Charles H. Roan, DD 853) | Bethlehem Steel, Quincy, Mass. | 27-9-45 | 15-3-46 | 12-9-46 |
| D 352 GAYRET (ex-Eversole, DD 789) | Todd SY, Seattle, Wash. | 28-2-45 | 8-1-46 | 10-7-46 |
| D 353 Adatepe (ex-Forrest Royal, | Bethlehem, Staten Isl., N.Y. | 6-6-45 | 17-1-46 | 28-6-46 |

DESTROYERS (continued)



Savastepe (D 348) - both 127-mm mounts fwd

L. & L. Van Ginderen, 6-82



Piyale Paşa (D 350) — twin 35-mm AA aft

L. & L. Van Ginderen, 10-84



Adatepe (D 353) - twin 35-mm mount aft, twin 40-mm fwd

H. Ehlers, 4-84



Yucetepe (D 345) - no 35- or 40-mm AA

H. Ehlers, 10-84

D: 2,425 tons (3,600 fl) S: 32 kts

Dim: 119.03 × 12.49 × 4.56 (6.4 over sonar)

A: 4/127-mm 38 cal. AA (II × 2) -2/40-mm AA (I × 2) (not in D 348-350) -2/35-mm Oerlikon AA (II × 1) -- 6/324-mm Mk 32 ASW TT (III × 2) --1/ASROC ASW RL (VIII × 1) - 1/Mk 9 d.c. rack (9 d.c.)

Electron Equipt: Radar: 1/. . . nav., 1/SPS-10, 1/SPS-40 (D 345, 348-50: SPS-29), 1/Mk 25 (D 351-353: 1/. . . also) Sonar: SQS-23

EW: WLR-1, WLR-3, ULQ-6 (not in D 348), 2 or 4/chaff RL (XX × 2 or 4)

M: 2 sets GT; 2 props; 60,000 hp Electric: 1,200 kw

Boilers: 4 Foster-Wheeler and/or Babcock & Wilcox, 43.3 kg/cm2, 454°C Fuel: 720 tons Range: 2,400/25; 4,800/15 Man: 14 officers, 260 men

Remarks: D 351 was transferred on 29-9-73, D 352 on 11-7-73, and DD 353 on 27-3-71. All received a twin 40-mm mount just before the bridge (with Mk 51, Mod. 2, optical director) and a twin 35-mm antiaircraft gun on the former DASH drone helicopter deck in the mid-1970s. D 351 has four Babcock & Wilcox boilers, while the other pair have two Babcock & Wilcox and two Foster-Wheeler boilers. All have chaff RL atop former hangar, two saluting guns fwd. GFCS include Mk 37 for 127-mm DP, 1 Mk 51 Mod. 2 for the 40-mm mount, and a radar GFCS (antenna atop after mast). D 348 was purchased 20-3-80 for cannibalization, but was instead refurbished and recommissioned 20-7-81; she has both 127-mm mounts fwd, the twin 35-mm AA on the fantail, no 40-mm AA, and retains the helo deck. D 349 and D 350 were leased for 5 years 5-6-80 and formally recommissioned 30-7-81. Because of their status they were not drastically altered, although one depth-charge rack, the twin 35-mm AA, and chaff RL were added. D 345 purchased 1-10-82, recommissioning 29-3-83; 40-mm and 35-mm AA not added as of late 1984. McKean (DD 784), previously damaged in a collision, transferred 1982 for cannibalization.

1 ex-U.S. Gearing FRAM-II class

Bldr: Bethlehem Steel, San Pedro, Cal.

Laid down

L

In serv.

D 354 Kocatepe (ex-Norris, DD 859)

29-8-44

25-2-45

9-6-45



Kocatepe (D 354)

H. Ehlers, 9-84

D: 2,390 tons (3,480 fl) S: 32 kts Dim: 119.03 × 12.49 × 4.6 (6.54 over sonar) A: 4/127-mm DP (II × 2) - 2/35-mm AA (II × 1) - 6/40-mm AA (II × 2, I \times 2) —1/Mk 15 trainable Hedgehog —6/324-mm Mk 32 ASW TT (III \times 2) 1/Mk 9 d.c. rack

Electron Equipt: Radar: 1/SPS-10, 1/SPS-40, 1/Mk 25, 1/. . . f.c.

Sonar: 1/SQS-23

EW: WLR-1, 2 chaff RL (XX × 2)

M: 2 sets GT; 2 props; 60,000 hp Electric: 1,200 kw Boilers: 4 Babcock & Wilcox; 43.3 kg/cm², 454°C

Fuel: 720 tons Range: 2,400/25; 4,800/15 Man: 14 officers, 260 men

Remarks: A previous Kocatepe (ex-Harwood, DD 861) was lost on 21-7-74 when mistakenly bombed by the Turkish Air Force. She was replaced by the Norris (DD 859), which had been transferred on 7-7-74 for cannibalization spares. Two single 40-mm AA were mounted on former DASH drone helicopter deck in 1974, and two twin 40-mm AA (with two Mk 51 Mod. 2 directors) added on upper deck between stacks in 1977. Has one Mk 37 radar GFCS. D 354 had a twin Oerlikon 35-mm AA substituted for the two single 40-mm aft and SPS-40 in place of SPS-60 radar in 1980. Sister Tinaztepe (D 355) badly damaged in collision 2-5-84 and stricken 1985.

1 ex-U.S. Allen M. Sumner FRAM-II class

Bldr: Federal SB, Kearney,

N.J.

D 356 ZAPER (ex-Hugh Purvis, DD 709)

Laid down 23-5-44

17-12-44

In serv. 1-3-45



Zafer (D 356)

H. Ehlers, 3-84

D: 2,200 tons (3,300 fl) S: 33 kts

Dim: 114.76 × 12.49 × 4.39 (5.79 over sonar)

A: 6/127-mm DP (II × 3) - 4/40-mm AA (II × 2) - 2/35-mm Oerlikon (II × 1) —2/Mk 11 Hedgehogs—6/324-mm Mk 32 ASW TT—1/Mk 9 d.c. rack Electron Equipt: Radar: 1/. . . nav., 1/SPS-10, 1/SPS-29, 1/Mk 25

Sonar: SQS-29 series

EW: WLR-1, ULQ-6, 2/chaff RL (XX × 2)

M: GT; 2 props; 60,000 hp Electric: 1,200 kw

Boilers: 4 Babcock & Wilcox; 43.3 kg/cm2, 454°C Fuel: 650 tons Range: 800/32; 4,300/11 Man: 15 officers, 260 men

REMARKS: Transferred on 15-2-72. In 1977 two twin 40-mm AA with two Mk 52, Mod. 2, optical GFCS for the twin mounts were added amidships; also has Mk 37 radar GFCS for 127-mm DP. Twin 35-mm AA replaced 2 single 40-mm AA on former helicopter flight deck in 1979.

• 1 ex-U.S. Robert H. Smith-class destroyer minelayer Steel, San Pedro, Cal.

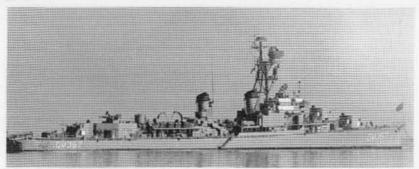
Bldr: Bethlehem

DM 357 MUAVENET (ex-Gwin, MMD 33, ex-DD 772)

Laid down 31-10-43

In serv. 9-4-44 30-9-44

DESTROYERS (continued)



Muavenet (DM 357)

H. Ehlers, 10-84

D: 2,250 tons (3,375 ft) S: 34 kts Dim: $114.76 \times 12.49 \times 4.4$ (hull) A: 6/127-mm DP (II \times 3) -2/76.2-mm Mk 33 DP (II \times 1) -12/40-mm AA (IV \times 2; II \times 2) -6/324-mm Mk 32 ASW TT (III \times 2) -1/Mk 11 Hedgehog ASW Mortars (XXIV \times 2) -1/Mk 9 d.c. rack (9 d.c.)

Electron Equipt: Radar: 1. . . nav., 1/SPS-10, 1/SPS-40, 1/Mk 25 f.c., 1/SPG-34 f.c.

Sonar: . . . EW: LR-1 intercept, 4 decoy RL (XX × 4)

M: 2 sets GT; 2 props; 60,000 hp Electric: 900 kw Boilers: 4 Babcock & Wilcox; 43.3 kg/cm², 454°C Fuel: 494 tons Range: 4,600/15 Man: 274 tot.

Remarks: Transferred on 22-10-71 after reactivation and modernization. Fire control includes 1 Mk 37 radar GFCS for 127-mm guns, Mk 63 radar GFCS for the 76.2-mm mount, and two Mk 51, Mod. 2, optical GFCS for 40-mm AA. Mine rails on either side of main deck of what is basically an Allen M. Sumner-class destroyer. Survivor of a U.S. Navy class of twelve. Modernized with new radars and armament 1982-83, SPS-40 replacing SPS-6, a twin 76.2-mm mount replacing the after quadruple 40-mm mount, etc.

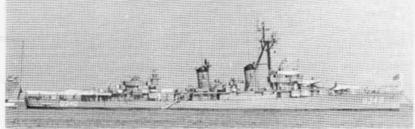
♦ 2 U.S. Fletcher-class destroyers

| | Bldr | Laid down | L | In serv. |
|--|--------------------------------------|-----------|----------|----------|
| D 340 ISTANBUL (ex-Clarence K. Bronson, DD 668) | Federal SB & DD, Newark, N.J. | 9-12-42 | 18-4-43 | 11-6-73 |
| D 341 Izmir (ex-Van Valkenburgh, DD 656) | Gulf S.B., Corp., Chickasaw, Ala. | 15-11-42 | 19-12-43 | 2-8-44 |

D: 2,850 tons normal (3.036 fl) S: 32 kts Dim: 114.85 × 12.03 × 4.29 (mean)
A: 4/127-mm Mk, 30 DP (I × 4) — 6/76,2-mm Mk 33 DP (II × 3) — 6/324-mm Mk 32 ASW TT (III × 2) — 2/Mk 11 Hedgehog ASW Mortars (XXIV × 2) — 1/Mk 9 d.c. racks (9 d.c.)

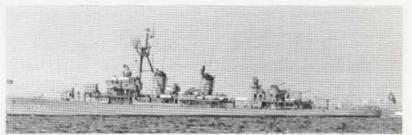
Electron Equipt: Radar: 1/. . . nav., 1/SPS-10, 1/SPS-6, 1/Mk 25, 2/Mk 34, 1/Mk 35 flc.

Sonar: SQS-29 series — EW: BLR-1, 4 decoy RL (XX \times 4) M: 2 sets geared turbines (D 340: G.E., D 341: Allis-Chalmers); 2 props; 60,000 hp Boilers: 4 Babcock & Wilcox; 39.8 kg/cm², 454 °C Electric: 880 kw Fuel: 650 tons Range: 1,260/32; 4,400/15 Man: Approx. 20 officers, 275 men



Istanbul (D 340)

H. Ehlers, 6-84



Izmir (D 341)

H. Ehlers, 10-84

Remarks: Transferred 14-1-67 and 28-2-67, respectively, and not stricken in 1982 as reported in the previous edition. Employed as "station ships." Have Mk 37 GFCS for the 127-mm guns, 1 Mk 56 and 2 Mk 63 GFCS for the 76.2-mm guns. Sisters Izmit (ex-Cogswell, DD 651) scrapped 14-12-84; Iskenderun (ex-Boyd, DD 544) and Içel (ex-Preston, DD 795) hulked at Gölcük in late 1984 awaiting scrapping.

FRIGATES

♦ 0 (+4) MEKO 200-class guided-missile frigates

| | Bldr | Laid down | L | In serv. |
|-------------|----------------------|-----------|---------|----------|
| F 240 YAVUZ | Blohm & Voss Hamburg | 31-5-85 | 7-11-85 | 1987 |
| F N | Howaldtswerke, Kiel | 25-9-85 | | |
| F N | Gölçük NSY | 14.74.74 | | |
| F N | Gölçük NSY | | | 200 |

D: 2,000 tons (2,784 fl) S: 27 kts Dim: 95.00 (88.00 pp) × 11.80 × 3.60 (mean hull)

A: 8/Harpoon SSM (IV × 2) — 1/Mk 20 SAM launcher (VIII × 1, Sea Sparrow missiles) — 1/127-mm Mk 45 Mod. 1 DP — 12/25-mm AA (IV × 3. Sea Zenith) — 6/324-mm Mk 32 Mod. 5 ASW TT (III × 2) — 1/AB 212 helicopter with Sea Skua missiles

Electron Equipt: Radar: 1/nav., 1/Plessey Dolphin, 1/WM-25, 1/STIR Sonar: SQS-56 hull-mounted—TACAN: . . . EW: . . . passive, 2/Barricade decoy RL (IX × 2)

M: 4 MTU 20V1163 TB93 diesels; 2 CP props; 22,536 hp Range: 4,000/20 Fuel: 380 tons Man: 170 tot. Electric: 1,440 kw

REMARKS: Ordered 4-83, with Blohm & Voss supplying technical assistance in constructing two in Turkey. The Contraves quadruple 25-mm Sea Guard AA gun system replaced the earlier-proposed single U.S. Vulcan-Phalanx AA. Will have the H.S.A. SEWACO data system and a single Siemens Albis optronic director aft. The airsearch radar has also been reported as an H.S.A. DA-08, vice Plessey Dolphin.

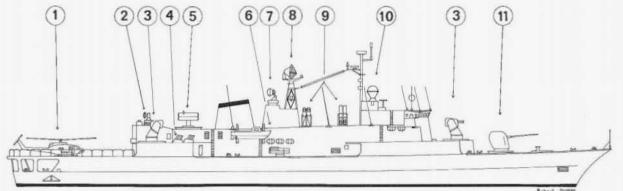
◆ 2 Berk class Bldr: Göçük Naval SY

| | Laid down | L | In serv. |
|------------|-----------|---------|----------|
| D 358 Berk | 9-3-67 | 25-6-71 | 12-7-72 |
| D 359 Peyk | 18-1-68 | 7-6-72 | 24-7-75 |



Peyk (D 359)

L. & L. Van Girderen, 9-83



MEKO 200 1. AB-212 helicopter 2. Siemens optronic director 3. Sea Zenith AA 4. decoy RL 5. Mk 29 launcher for Sea Sparrow 6. Mk 32 ASW TT 7. STIR radar f.c. director 8. air-search radar 9. Harpoon missiles 10. WM-25 track-while-scan radar f.c.s. 11. 127-mm DP

FRIGATES (continued)

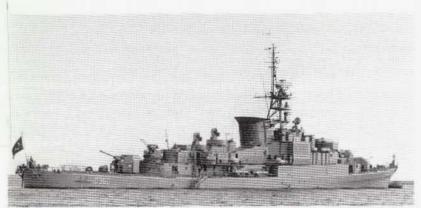
D: 1,450 tons (1,950 fl) S: 25 kts Dim: 95.15 × 11.82 × 4.4 (5.5 over sonar) 4/76.2-mm DP (II × 2) -2/Mk 11 Hedgehogs -6/324-mm Mk 32 ASW TT (III × 2) -1/Mk 9 d.c. rack

Electron Equipt: Radar: 1/SPS-10, 1/SPS-40, 2/SPG-34 Sonar: 1/SQS-11 - EW: WLR-1

M: 4 Fiat-Tosi 16 cyl., 800 rpm, Type 3-016-RSS diesels; 1 prop; 24,000 hp

REMARKS: Based on the U.S. Claud Jones class, but more heavily armed. Can carry a helicopter but have no hangar. Two Mk 63 GFCS, with the SPG-34 radars mounted on the gunmounts.

| ♦ 2 ex-German Köln (Type 120) class | Bldr: H.C. Stülcken, Hamburg | | | |
|---|------------------------------|-----------|----------|--|
| | Laid down | L | In serv. | |
| D 360 GELIBOLU | 15-12-58 | 24-10-59 | 15-12-62 | |
| (ex-Gazi Osman Paşa, ex-Karlsruhe, F 223) D 361 Gemlik (ex-Emden, F 221) | 15-4-58 | - 21-3-59 | 24-10-61 | |



Gelibolu (D 360)

H. Ehlers, 4-84



Gelibolu (D 360)

H. Ehlers, 4-84

D: 2,425 tons (2,970 fl) S: 30 kts (20 on diesels)

Dim: 109.83 (105.00 pp) × 10.50 × 4.61

A: 2/100-mm Mod. 1953 DP (I × 2) -6/40-mm AA (II × 2, I × 2) -2/375-mm Bofors ASW RL (IV × 2) -4/533-mm ASW TT (I × 4) -2/d.c. racks (12 d.c.) - up to 82 mines

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/DA-08, 1/SGR-103, 2/M 44, 1/M 45

Sonar: 1 PAE CWE hull-mounted

EW: . . intercept, 2 decoy RL (XX × 2)

M: CODAG: 4 M.A.N. 16-cyl., 3,000-hp diesels, 2 Brown-Boveri 13,000-hp gas turbines; 2 CP props; 36,000 hp

Electric: 2,700 kw Fuel: 361 tons Range: 900/30; 2,900/22

Man: 17 officers, 193 men (in German service)

Remarks: D 360 transferred 28-3-83 at Gölçuk. Ex-Emden transferred late 1983. Sister Köln may transfer later. Made 33 kts on original trials. Carry 72 rockets for the ASW

GUIDED-MISSILE PATROL BOATS

♦ 6 (+ . . .) German FPB 57-class

Bldrs: P 340: Lürssen, Vegesack, W. Germany; others: Taskizak NDY, Istanbul

| | Laid down | L | In serv. |
|--------------------------|-----------|----------|----------|
| P 340 Dogan | 2-6-75 | 16-6-76 | 15-6-77 |
| P 341 MARTI | 1-7-75 | 30-6-77 | 27-7-78 |
| P 342 TAYFUN | 1-12-75 | 19-7-79 | 1980 |
| P 343 Volkan | | 11-8-80 | 1981 |
| P 344 Rüzgar (ex-Gurbet) | 30-7-81 | | 1983 |
| P 345 Poyraz | *** | 17-12-84 | 1985 |



Dogan (P 340)

H. Ehlers, 5-84

D: 353 tons (398 fl) **S:** 36.5 kts **Dim:** 58.1 (54.4 pp) \times 7.62 \times 2.83

A: 8/Harpoon SSM (IV \times 2) = 1/76-mm OTO Melara Compact DP = 2/35-mm Oerlikon AA (II \times 1) = 2/7.62-mm mg (I \times 2)

Electron Equipt: Radar: 1/Decca 1226, 1/H.S.A. WM-28-41 EW: SUSIE-1 intercept, 2 decoy RL (XX × 2)

M: 4 MTU 16V956 TB91 diesels; 4 props; 18,000 hp (16,000 sust.) Electric: 405 kVA Range: 700/35; 1,600/32.5; 3,300/16 Man: 5 officers, 33 men

REMARKS: The 76-mm mount has a local control cupola. Carry 300 rounds 76-mm, 2,750 rounds 35-mm. Steel hulls, aluminum superstructures. Plan continued construction at rate of one per year.

TORPEDO BOATS

 8 Kartal-class guided-missile and torpedo boats Bldr: Lürssen, Vegesack (In serv. 1967-71)

P 328 SIMSEK P 321 DENIZKUSU P 324 KARTAL P 326 PELIKAN P 329 KARSIGA P 322 ATMACA P 323 SAHIN P 327 ALBATROS



Sahin (P 323)

L. & L. Van Ginderen, 11-83

D: 184 tons (210 fl) S: 42 kts Dim: 42.8 × 7.14 × 2.21 A: 2/40-mm AA (I × 2) - 2/Penguin Mk 1 SSM - 2/533-mm TT

Electron Equipt: Radar: 1/Decca 1226 M: 4 MTU 16V538 diesels; 4 props; 12,000 hp Range: 500/39; 1,000/32 Man: 39 tot.

REMARKS: Similar to the German Jaguar class. Wooden planking; steel and light-metal keel and frames; light-metal superstructure. Can be fitted as fast gunboats or minelayers (four mines). All now carry two Penguin IR-homing anti-ship missiles. Sister Melten cut in two by Soviet naval training ship Khasan 25-9-85.

6 ex-West German Zobel class Krogerwerft, Rendsburg)

Bldr: Lürssen, Vegesack (except ex-Hyāne:

| | Laid down | L | In serv. |
|----------------------------|-----------|----------|----------|
| P N (ex-Gepard, P 6098) | 20-4-61 | 14-4-62 | 18-4-63 |
| P N (ex-Frettchen, P 6100) | 30-3-62 | 20-11-62 | 26-6-63 |
| P N (ex-Dachs, P 6094) | 22-11-60 | 10-6-61 | 25-9-62 |
| P N (ex-Wiesel, P 6093) | 22-8-60 | 14-3-61 | 25-6-62 |
| P N (ex-Ozelot, P 6101) | 14-4-62 | 4-2-63 | 25-10-63 |
| P N (ex-Hyane, P 6099) | 13-7-61 | 31-3-62 | 10-5-63 |



ex-Ozelot (PG 101) - prior to transfer

G. Gyssels, 8-83

TORPEDO BOATS (continued)

D: 210 tons (230 fl) S: 43 kts Dim: 42.62 (39.80 pp) \times 7.10 \times 1.59 (2.20 props) A: 2/40-mm Bofors AA (I \times 2) — 2/533-mm TT (2 reloads)

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/H.S.A. M20-2

EW: . . . intercept

M: 4 MTU 16V538 diesels; 4 props; 12,000 hp Electric: 265 kVA

Range: 500/39.5; 740/34.5 Man: Approx. 40 tot.

Remarks: Purchased after striking from West German Navy, first three on 14-5-84 and others 8-10-84. Had been modernized with H.S.A. M-20 track-while-scan radar f.c.s. and aft-firing wire-guided torpedoes (Seeal) between 3-8-70 and 16-8-71. Woodenplanked hull on aluminum alloy frame. New names, numbers, and any alterations made by Turkish Navy not reported.

♦ 4 ex-German Jaguar class (Type 140)

Bldrs: P 330 and P 336: Krögerwerft, Rendsburg; others: Lürssen, Vegesack

L 16-11-59 P 335 KALKAN (ex-Löwe) 8-11-58 P 331 TUFAN (ex-Storch) P 333 MIZRAK (ex-Häher) 9-1-60 P 336 KARAYEL (ex-Tiger) 21-4-58

D: 184 tons (210 fl) S: 42 kts Dim: 42.62 × 7.1 × 2.21 (props)

A: 2/40-mm AA $(I \times 2) - 4/533$ -mm TT or 2/TT and mines

M: 4 MTU 16V538 diesels; 4 props; 12,000 hp Range: 500/39; 1,000/32 Man: 39 tot.

Remarks: Transferred 1975-76. The Alk, Iltis, and Reiher were transferred at the same time to be cannibalized for the maintenance of the seven in service. Similar to Kartal class but shorter deckhouse with stepped face. Sisters Firtina (P 330, ex-Pelikau), Kiliç (P 332, ex-Pinguin), and Yildiz (P 334, ex-Wolf) stricken 8-6-82; the others will probably go soon.

PATROL BOATS AND CRAFT

Bldr: Taskizak Naval DY, Istanbul (In serv. 30-7-76) 1 German PB 57 class

Girne (P 140)

P 140 GIRNE

H. Ehlers, 3-83

D: 341 tons (399 fl) S: 29.5 kts Dim: 58.1 (54.4 pp) \times 7.6 \times 2.8 A: 2/40-mm AA (I \times 2) — 2/12.7-mm mg (I \times 2) — 4/Mk 20 Mousetrap ASW RL-2/d.c. projectors-2/d.c. racks

Electron Equipt: Radar: 2/navigational

M: 2 MTU 16V956 TB91 diesels; 2 props; 9,000 hp Electric: 405 kVA

Range: 2,200/28; 4,200/16 Man: 3 officers, 27 men

Remarks: Same basic design as the Spanish Lazaga-class patrol boats, but with lighter armament. Design by Lürssen. Construction program canceled after one unit. One CSEE Naja optronic GFCS. Single 40-mm Bofors replaced twin 40-mm aft by 1982.

1 ex-U.S. Asheville class

Bldr: Peterson Builders, Sturgeon Bay, Wisc.

L In serv.

P 339 Bora (ex-Surprise, PG 97) 15-11-68 24-9-69



Bora (P 339)

H. Ehlers, 5-83

D: 225 tons (240 fl) S: 40 kts (16 on diesels)

Dim: $50.14 (46.94 \text{ pp}) \times 7.28 \times 2.9$

A: 1/76.2-mm Mk 34 DP - 1/40-mm AA - 4/12.7-mm mg (II \times 2)

Electron Equipt: Radar: 1/SPS-53, 1/SPG-50

M: CODAG: 1 LM 1500 Mk 7 gas turbine (12,500 hp); 2 Cummins 875V12 diesels (1,450 hp); 2 props

Fuel: 50 tons Range: 325/35; 1,700/16 Man: 25 tot.

REMARKS: Leased on 28-2-73. Mk 63 radar GFCS, with SPG-50 on 76.2-mm gunmount. Sister Yildirim (P 338, ex-Defiance, PG 95) lost through explosion 11-4-85 near Lesbos

 12 AB 25 class Bldrs: Gölçük Naval SY (In serv. 1967-70)

P 1225 AB 25 P 1229 AB 29 P 1233 AB 33 P 1234 AB 34 P 1226 AB 26 P 1230 AB 30 P 1227 AB 27 P 1231 AB 31 P 1235 AB 35 P 1228 AB 28 P 1232 AB 32 P 1236 AB 36



AB 26

L. & L. Van Ginderen, 6-82

D: 150 tons (170 fl) S: 22 kts Dim: 40.24 × 6.4 × 1.65

A: 1/40-mm AA -1/20-mm AA -2/12.7-mm mg (I \times 2) -2/Mk 20 Mousetrap ASW RL-1/d.c. rack

M: SACM-AGO V16CSHR diesels; 2 props; 4,800 hp; 2 cruise diesels; 300 hp

REMARKS: Fourteen others are assigned to the Marine Police. Built with French assistance. AB 35 and 36, delivered two years later than others, have a lower hull knuckle forward and bow bulwarks.

♦ 4 ex-U.S. PGM 71 motor gunboats Bldr: Peterson Builders, Sturgeon Bay, Wisc.

| | L | In serv. |
|---------------------------|---------|----------|
| P 1221 AB 21 (ex-PGM 104) | 4-5-67 | 8-67 |
| P 1222 AB 22 (ex-PGM 105) | 25-5-67 | 9-67 |
| P 1223 AB 23 (ex-PGM 106) | 7-7-67 | 10-67 |
| P 1224 AB 24 (ex-PGM 108) | 14-9-67 | 5-68 |
| | | |



AB 22

1982

D: 104 tons (144 fl) **S:** 17 kts **Dim:** $30.81 \times 6.45 \times 1.83$

A: 1/40-mm AA — 4/20-mm AA (II × 2) — 2/Mk 22 double Mousetrap ASW RL-2/d.c. racks (4 d.c.)

Electron Equipt: Radar: 1/Raytheon 1500B - Sonar: SQS-17A

M: 8 G.M. 6-71 diesels; 2 props; 2,040 hp Electric: 30 kw

Fuel: 16 tons Range: 1,000/12 Man: 30 tot. Remarks: Two twin 12.7-mm mg have been removed.

♦ 6 ex-U.S. PC 1638-class antisubmarine patrol boats

Bldrs: P 116; Gölçük Naval SY; others: Gunderson Bros., Portland, Ore.

| | L | In serv |
|---------------------------------|---------|---------|
| P 111 SULTAN HISAR (ex-PC 1638) | 1964 | 5-64 |
| P 112 Demirhisar (ex-PC 1639) | 9-7-64 | 4-65 |
| P 113 Yarhisar (ex-PC 1640) | 14-5-64 | 9-64 |
| P 114 AKHISAR (ex-PC 1641) | 14-5-64 | 12-64 |
| P 115 Sivrihisar (ex-PC 1642) | 5-11-64 | 6-65 |
| P 116 Kochisar (ex-PC 1643) | 12-64 | 7-65 |

D: 325 tons (477 fl) S: 19 kts Dim: 52.9 × 7.0 × 3.1 (hull)

A: 1/40-mm AA — 4/20-mm AA (II \times 2) — 1/Mk 15 trainable Hedgehog ASW mortar (XXIV \times 1) — 4/Mk 6 d.c. projectors — 1/Mk 9 d.c. rack (9 d.c.)

Electron Equipt: Radar: 1/Decca 707 - Sonar: SQS-17A

M: 2 Alco 16 9 × 10½ T diesels; 2 props; 4,800 hp Fuel: 60 tons Range: 5,000/10 Man: 5 officers, 60 men

Remarks: Based on the PC 471 class of World War II.

PATROL BOATS AND CRAFT (continued)



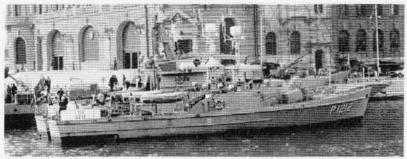
Kochisar (P 116)

H. Ehlers, 4-83

♦ 4 ex-U.S. Coast Guard 83-foot class

Bldr: U.S.C.G. Yard, Curtis Bay, Md.

P 1209 LS 9 P 1210 LS 10 P 1211 LS 11 P 1212 LS 12



LS 12 (P 1212)

H. Ehlers, 15-5-82

D: 63 tons S: 18 kts Dim: 25.3 × 4.25 × 1.55 A: 1/20-mm AA - 2/Mk 20 Mousetrap ASW RL Electron Equipt: Radar: 1/SO-2-Sonar: QBE-3 M: 4 G.M. 6-71 diesels; 2 props; 900 hp Man: 15 tot.

Remarks: Transferred on 25-6-53. Former Turkish hull numbers P 339, P 308, P 309, and P 310. Wooden hulls.

MINE WARFARE SHIPS

Note: The destroyer Muavenet (D 357) is also a minelayer when required, and the ex-German Köln-class frigates have mine rails.

 1 Danish Falster-class minelayer mark

Bldr: Frederikshaven Naval DY, Den-

Laid down L In serv. N 110 Nusret (ex-N 108, ex-MMC 16) 16-9-64 1962 1964



Nusret - wearing old number

Istanbul

D: 1,880 tons S: 16.5 kts Dim: 77.0 (72.5 pp) × 12.8 × 3.4

A: 4/76.2-mm AA Mk 33 (II × 2) -400 mines

Electron Equipt: Radar: 1/navigational, 1/RAN 7S, 2/SPG-34

M: 2 G.M. 16-567D3 diesels; 2 CP props; 4,800 hp

Fuel: 130 tons Man: 130 tot.

Remarks: Paid for by the U.S.A. Two Mk 63 radar GFCS systems.

 ◆ 1 (+1) Saruçabay-class minelayer/landing ships Bldr: Taskizak NSY,

Laid down In serv. NL 123 SARUÇABAY 25-7-80 30-7-81 26-7-84 NL 124 KARAMÜRSEL 26-7-84 26-7-84

D: 2,600 tons (fl) **S:** 14 kts **Dim:** $92.0 \times 14.0 \times \ldots$ **A:** 4/40-mm AA (II \times 2) — 4/20-mm AA (II \times 2) — 50 mines

M: 3 diesels; 3 props; 4,320 hp

Remarks: Enlarged version of Cakabey, with raised forecastle and larger superstructure, helicopter deck aft. Can carry 11 tanks, 12 trucks, and 600 troops. Minelaying ports in stern. Two Mk 51 Mod. 2 lead-computing sights for the 40-mm AA. See photo

Bldr: Taskizak NSY, Istanbul 1 Cakabey-class minelayer/landing ship

> In serv. Laid down

NL 122 CAKABEY (ex-L 405) 3-6-77 25-7-80

D: 1,600 tons **S:** 14 kts **Dim:** 77.3 (74.3 pp) × 12.0 × 2.3 A: 4/40-mm AA (II × 2) -8/20-mm AA (II × 4) - 150 mines

M: 3 diesels; 3 props; 4,500 hp

Remarks: Redesignated as a minelayer/landing ship in 1980. Originally planned as a class of four. As a landing ship, NL 112 can carry 400 troops, 9 U.S. M-48 tanks, and 10 jeeps. Carries two LCVP in davits. Deck cleared forward as a helicopter platform. See photo in addenda.

♦ 2 ex-German, ex-U.S. LST 542-class minelayer/tank landing ships

Bldrs: L 403: Missouri Valley Bridge & Iron, Evansville, Ind.; L 404: American Bridge Co., Ambridge, Pa.

| | Laid down | L | In serv. |
|---|-----------|---------|----------|
| NL 120 BAYRAKTAR (ex-L 403, ex-Bottrop, | 22-11-44 | 3-1-45 | 26-1-45 |
| ex-Saline County, LST 1101) | | | |
| NL 121 Sancaktar (ex-Bochum, | 20-12-44 | 17-2-45 | 14-3-45 |
| ex-Rice County, LST 1089) | | | |



Bayraktar (NL 120)

D: 3,640 tons (4,140 fl) S: 11 kts Dim: 101.37 × 15.28 × 3.98 (max.) A: 6/40-mm AA (II × 2, I × 2) - mines Electric: 860 kw Range: 15,000/9 Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 2 G.M. 16-567A diesels; 2 props; 1,700 hp Man: 60 tot.

REMARKS: NL 120 was transferred to West Germany on 6-2-64 and to Turkey on 13-12-72; NL 121 to West Germany on 23-1-64 and to Turkey on 12-12-72. Converted to minelayers while in German service. Six rails on the upper deck, tapering to two at the stern, have been removed, but there remain four rails below decks, exiting through a broadened stern. Four two-ton mine-handling cranes added. Bow doors retained. Redesignated as amphibious ships 1974-75, but again placed in mine warfare category 1980.

Bldr: Brown SB, Houston, Tex. 5 minelayers

| | Laid down | L | In serv. | |
|---|-----------|---------|----------|--|
| N 101 Mordogan (ex-MMC 11, ex-LSM 484) | 17-2-45 | 10-3-45 | 15-4-45 | |
| N 102 MERIC (ex-MMC 12, ex-LSM 481) | 17-2-45 | 10-3-45 | 8-4-45 | |
| N 103 Marmaris (ex-MMC 10, ex-LSM 490) | 3-3-45 | 24-3-45 | 28-4-45 | |
| N 104 MERSIN (ex-Vale, ex-MMC 13, ex-LSM 492) | 28-5-44 | 22-6-44 | 4-8-44 | |
| N 105 MUREFTE (ex-Vidar, ex-MMC 14, ex-MSC 493) | 10-3-45 | 30-3-45 | 4-5-45 | |



Meric (N 102)

L. & L. Van Ginderen, 6-82

D: 743 tons (1,100 fl) **S:** 12.5 kts **Dim:** $62.0 \times 10.52 \times 2.54$ A: 6/40-mm AA (II × 3) - 5/20-mm AA (I × 5) - 400 mines

Electron Equipt: Radar: 2/navigational M: 2 G.M. 16-278A diesels; 2 props; 2,800 hp Fuel: 60 tons Range: 2,500/12 Man: 70 tot.

REMARKS: Ex-U.S. LSM 1-class medium landing ships. In 10-52 after conversion, the first three were transferred to Turkey, the other two to Norway; the latter were

MINE WARFARE SHIPS (continued)

returned to U.S. control in 1960, then reassigned to Turkey. Four booms, two forward, two aft, for the loading of mines. Two minelaying rails. Originally had four twin 40-mm AA and six 20-mm AA. N 104 has two Fairbanks-Morse 38D81/8 × 10 diesels.

• 1 mine-planter Bldr: Higgins, New Orleans, La. (L: 1958)

N 115 MEHMETCIK (ex-YMP 3)

D: 540 tons (fl) S: 10 kts Dim: 39.62 × 10.67 × 3.05 A: 1/40-mm AA Electron Equipt: Radar: 1/Decca 12

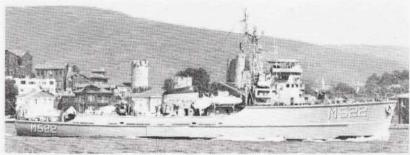
M: 2 diesels; 2 props Man: 22 tot.

REMARKS: Paid for by the U.S. Military Aid Program. Used to place controlled minefields. Gun not normally mounted. See photo in addenda.

• 6 ex-German French Mercure-class coastal minesweepers

Bldr: Amiot (CMN), Cherbourg

| | Laid down | L | In serv. |
|------------------------------|-----------|----------|----------|
| M 520 KARAMÜRSEL (ex-Wörms) | 19-3-58 | 30-1-60 | 30-4-60 |
| M 521 Kerempe (ex-Detmold) | 19-2-58 | 17-11-59 | 20-2-60 |
| M 522 Kilimli (ex-Siegen) | 18-4-58 | 29-3-60 | 9-7-60 |
| M 523 Kozlu (ex-Hameln) | 20-1-58 | 20-8-59 | 15-10-59 |
| M 524 Kusadasi (ex-Vegesack) | 20-12-57 | 21-5-59 | 19-9-59 |
| M 525 KEMER (ex-Passau) | 19-5-58 | 25-6-60 | 15-10-60 |



Kilimli (M 522)

L. & L. Van Ginderen, 6-82

D: 366 tons (383 fl) S: 14.5 kts Dim: 44.62 (42.5 pp) \times 8.41 \times 2.55 A: 2/20-mm AA (II \times 1) Electric: 520 kw

Electron Equipt: Radar: 1/Decca 707

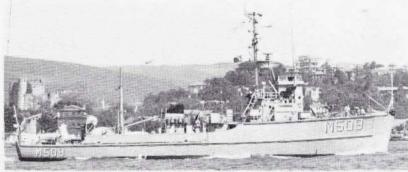
M: Mercedes-Benz MB-820 Db diesels; 2 CP props; 4,000 hp Man: 40 tot.

Remarks: These ships were built for the German Navy, placed in reserve in 1963, and stricken on 31-12-73. Transferred to Turkey between 6-75 and 10-75, except M 525, in 1979. French sister Mercure now a fisheries-protection ship. Wooden construction.

◆ 12 ex-U.S. Adjutant-, MSC 268(*)-, and MSC 289 (**)-class coastal minesweepers

| | L | In serv. |
|---|----------|----------|
| M 507 SEYMEN (ex-De Panne, ex-MSC 131) | | 28-10-55 |
| M 508 Selçuk (ex-Pavot, ex-MSC 124) | | 6-54 |
| M 509 SEYHAN (ex-Renoncule, ex-MSC 142) | | 8-54 |
| M 510 Samsun (ex-MSC 268)* | 6-9-57 | 30-9-58 |
| M 511 SINOP (ex-MSC 270)* | 4-1-58 | 2-59 |
| M 512 SÜRMENE (ex-MSC 271)* | 1958 | 27-3-59 |
| M 513 SEDDUL BAHR (ex-MSC 272)* | 1958 | 5-59 |
| M 514 SILIFKE (ex-MSC 304)** | 21-11-64 | 9-65 |
| M 515 Saros (ex-MSC 305)** | 1-5-65 | 2-66 |
| M 516 SIGAÇIK (ex-MSC 311)** | 12-6-64 | 6-65 |
| M 517 SAPANCA (ex-MSC 312)** | 14-9-64 | 26-7-65 |
| M 518 SARIYER (ex-MSC 315)** | 21-4-66 | 8-9-67 |

Bldrs: M 507: Hiltebrant DD, Kingston, N.Y.; M 508: Stephen Bros.; M 509: South Coast Co., Newport Beach, Cal.; M 510 to M 513: Bellingham SY, Bellingham, Wash.; M 514, M 515; Dorchester Builders, Dorchester, N.J.; M 516 to M 518: Peterson Builders, Sturgeon Bay, Wisc.



Seyhan (M 509) — Adjutant class

L. & L. Van Ginderen, 6-82



Saros (M 515) - MSC 289 class

U.S. Navy, 1984

D: 300 tons (392 fl) **S:** 14 kts **Dim:** 43.0 (41.5 pp) \times 7.95 \times 2.55 **A:** 2/20-mm AA (II \times 1) **M:** 2 G.M. 8/268A diesels; 2 props; 1,200 hp Range: 2,500/10 Man: 4 officers, 34 men

Remarks: M 507 was returned to the U.S.A. by Belgium in 1970, and M 508 and M 509 were returned by France on 23-3-70, then transferred to Turkey. The MSC 268 class have 4 G.M. 6-71 diesels; 2 props; 880 hp. The MSC 289 class have lower superstructure, taller stacks, and 2 Waukesha L-1616 diesels of 600 hp each; Dim: 44.32 X

4 ex-Canadian Bay-class coastal minesweepers Bldr: Davie SB, Lauzon, Quebec

20-5-73 24-4-52 M 530 Trabzon (ex-Gaspé) M 532 TIREBOLU (ex-Comax) M 531 TERME (ex-Trinity) 31-7-53 M 533 TEKIRDAG (ex-Ungava) 12-11-51



Trabzon (M 530) - wearing old number

1969

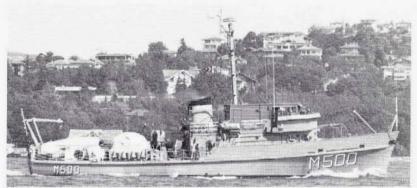
D: 390 tons (412 fl) **S:** 16 kts **Dim:** 50.0 (46.05 pp) \times 9.21 \times 2.8 A: 1/40-mm AA Electron Equipt: Radar: 1/Sperry Mk 2 M: 2 G.M. 12-278A diesels; 2 props; 2,400 hp Range: 4,000/10 Man: 44 tot. Electric: 940-kw sweep/plus 690-kw ship's service Fuel: 52 tons

Remarks: Transferred under U.S. Military Aid Program on 19-5-58. Wood-planked skin on steel frame.

♦ 4 ex-U.S. Cape-class inshore minesweepers

Bldr: Peterson Builders, Sturgeon Bay, Wisc.

| | L | In serv. |
|---------------------------|---------|----------|
| M 500 Foca (ex-MSI 15) | 23-8-66 | 8-67 |
| M 501 Fethiye (ex-MSI 16) | 7-12-66 | 9-67 |
| M 502 Fatsa (ex-MSI 17) | 11-4-67 | 10-67 |
| M 503 FINIKE (ex-MSI 18) | 11-67 | 12-67 |



Foca (M 500)

L. & L. Van Ginderen, 6-82

D: 203 tons (239 fl) S: 12.5 kts Dim: 34.06 × 7.14 × 2.4 A: 1/12.7-mm mg M: 4 G.M: 6-71 diesels; 2 props; 960 hp Electric: 120 kw Fuel: 20 tons Range: 1,000/9 Man: 20 tot.

Remarks: Transferred on completion. Wooden construction.

MINE WARFARE SHIPS (continued)

2 ex-U.S. 64-foot distribution-box minefield tenders

Y 1149 SAMANDIRA L 2 Y 1148 SAMANDIRA L 1

D: 72 tons (fl) S: 9.5 kts Dim: 19.58 × 5.72 × 1.83 A: 1 Gray Marine 64HN9 diesel; 1 prop; 225 hp Man: 6 tot.

REMARKS: Transferred in 1959.

• 9 mine-disposal diving tenders Bldr: U.K. (In serv. 1942)

P 318 MTB 8 P 311 Dalgiç 1 (ex-MTB 1) P 314 MTB 4 P 312 DALGIÇ 1 (ex-MTB 2) P 316 MTB 6 P 319 MTB 9 P 317 MTB 7 P 320 MTB 10 P 313 MTB 3



Dalgic 2 (P 312)

H. Ehlers, 7-84

D: 70 tons S: 20 kts Dim: 21.8 × 4.2 × 2.6 M: 2 diesels; 2,000 hp A: 1/12.7-mm mg or 20-mm AA in some

Remarks: First two redesignated diver support boats in 1983.

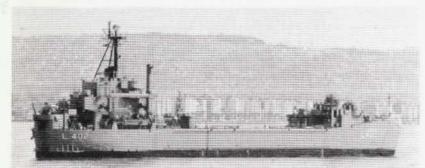
AMPHIBIOUS WARFARE SHIPS AND CRAFT

Note: The Cakabey (NL 112), Bayraktar (NL 120), and Sancaktar (NL 121), formerly listed as landing ships, are now listed as minelayers; they can still be employed in amphibious landings, as can the new Saruçabay (NL 123) class.

2 ex-U.S. Terrebonne Parish-class tank landing ships

Bldr: Christy Corp., Sturgeon Bay, Wisc.

In serv. L 401 ERTUGRUL (ex-Windham County, LST 1170) 22-5-54 15-12-54 L 402 SERDAR (ex-Westchester County, LST 1167) 18-4-53 10-3-54



Serdar (L 402)

H. Ehlers, 5-82



H. Ehlers, 6-84



C 137 and a sister

D: 2,590 tons (5,786 ft) S: 15 kts Dim: 117.35 (112.77 pp) × 17.06 × 5.18 A: 6/76.2-mm DP (II × 3) Electron Equipt: Radar: 1/SPS-21, 2/Mk 34 M: 4 G.M. 16-268A diesels; 2 CP props; 6,000 hp Electric: 600 kw Fuel: 874 tons Man: 116 crew + 395 troops

Remarks: L 401 transferred in 6-73 and L 402 in 8-74. Cargo: 2,200 tons. Can carry four LCVPs in Welin davits. Two Mk 63 radar GFCS.

 ◆ 34 (+3 + . . .) C 107-class utility landing craft (In serv. 1966-. . .) Bldrs: C 107 through C 138: Gölçük Naval SY; C 139-144: Taskizak NDY C 107 through C 130; C 134; C 135; C 137-141; C 142-144 (L: 25-7-85)

D: 280 tons light (600 ft) S: 8.5 kts (loaded) Dim: 56.56 × 11.58 × 1.25 (aft) A: 2/20-mm AA (I × 2) — 2/12.7-mm mg (I × 2) M: 3 G.M. 6-71 diesels; 3 props; 900 hp (675 sust.) Range: 600/10 (light); 1,100/8

Remarks: Continuing construction program, design based on British LCT(4) design. Also being built for Libya, which received C 133 and C 134 from Turkish inventory in 12-79, and C 131 - C 133 in 1983. C 137 and C 138 were launched 21-3-80 and commissioned 20-7-81; C 139 through C 141 were launched at Taskizak during Aug.-Sept. 1984. Can carry 100 troops and five M-48 tanks. Superstructure configurations vary: C 121 and later have mg platform atop pilothouse. C 136 lost in storm 30-1-85.

Note: Ex-British LCT(4)-class landing craft Ç 103 stricken 1983.

◆ 14 (+ . . .) utility landing craft Bldr: Taskizak, Istanbul, 1965-66 C 205 through C 218



C 211

1973

D: 320 tons (405 fl) S: 10 kts Dim: 44.3 (40.8 wl) × 8.8 × 1.7 A: 2/20-mm AA (I × 2) M: 2 G.M. 6-71 diesels; 2 props; 600 hp (450 sust.)

♦ 1 ex-U.S. LCU 501 (LCT (6))-class utility landing craft

In serv. 16-2-44 C 204 Bldr: Pidgeon-Thomas Iron Co., Memphis, Tenn. 9-2-44



C 204

L. & L. Van Ginderen, 9-83

D: 143 tons (309 fl) S: 8 kts Dim: 36.68 × 9.75 × 1.22 (aft) A: 2/20-mm AA (I × 2) M: 3 Gray Marine 64HN9 diesels; 3 props; 675 hp Electric: 20 kw Fuel: 11 tons Range: 700/7 Man: 12 tot

Remarks: Transferred in 7-67. Cargo: 150 tons + 8 troops. Sisters Ç 201-Ç 203 stricken 1983.

AMPHIBIOUS WARFARE SHIPS AND CRAFT (continued)

 20 U.S. LCM (8)-class landing craft serv. 1965-66)
 Bldr: Taskizak NDY, Istanbul (In

Ç 301 through Ç 320

D: 56 tons (113 fl) S: 9 kts Dim: 22.43 × 6.42 × 1.6

A: 2/12.7-mm mg (I × 2) M: 4 G.M. 6-71 diesels; 2 props; 660 hp Man: 5 tot.

HYDROGRAPHIC SHIPS

• 1 ex-British Catherine-class former minesweeper

Bldr: Assoc. SB, Lake Washington, Wash.

Laid down L In serv.
A 593 CANDARLI (ex-Frolic, ex-BAM 29) 5-3-43 20-6-43 18-5-44



Çandarli (A 593)

G. Arra, 1972

D: 1,010 tons (1,185 fl) S: 18 kts Dim: 67.31 × 9.75 × 3.2 A: 1/76.2-mm DP — 4/20-mm AA Electron Equipt: Radar: 1/Decca 707 M: 4 G.M. 12-278A diesels, electric drive; 2 props; 3,532 hp Electric: 360 kw Fuel: 210 tons Range: 3,500/17; 8,500/11 Man: 105 tot.

Remarks: Lend-lease version of the U.S. Auk class, transferred to Great Britain on completion. Survivor of a group of seven transferred to Turkey in 3-47. Converted later for service as survey ships. Charthouse added between stacks. Sister Çarşamba (A 594, ex-Tattoo, BAM 32) stricken 1983.

◆ 2 ex-U.S. 52-foot inshore-survey craft (In serv. 1966)

Y 1221 Mesaha 1 Y 1222 Mesaha 2

D: 31.7 tons (37.6 ft) S: 10 kts Dim: 15.9 × 4.45 × 1.3 M: 2 G.M. 6-71 diesels; 2 props; 330 hp Range: 600/10 Man: 10 tot.

AUXILIARY SHIPS

♦ 1 replenishment oiler Bldr: Gölçük Naval SY, Istanbul (L: 16-11-83)

A 580 AKAR

D: Approx. 20,000 tons (fl) S: 15 kts Dim: 145.1 × 22.8 × . . .

A: 2/76.2-mm DP (I × 2) -2/40-mm AA (I × 2)

M: 1 diesel; 1 prop; 6,500 hp Man: 329 tot.

Remarks: 15,000 dwt. Underway replenishment capability.

♦ 1 new-construction transport oiler

Bldr L In serv.
A 570 Taskizak Taskizak NDY 28-7-83 1-8-84



Taskizak (A 570) - fitting out

H. Ehlers, 5-84

D: Approx. 1,800 tons (fl) S: 13 kts Dim: . . . ×

A: 1/40-mm AA -2/20-mm AA $(I \times 2)$

M: 1 diesel; 1 prop; 1,400 hp Man: 57 tot. Cargo: 1,000 dwt

 1 Turkish-designed replenishment oiler (L: 7-69)
 Bldr: Taskizak NDY, Istanbul

A 573 Binbaşı Saadettin Gürçan

D: 1,505 tons (4,680 fl) **S**: 16 kts **Dim**: $89.7 \times 11.8 \times 5.4$

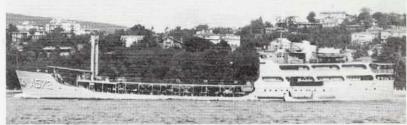
A: 1/40-mm AA -2/20-mm AA $(I \times 2)$

M: 4 G.M. 16-567A diesels, electric drive; 2 props; 4,400 hp

Remarks: One liquid-replenishment station on each side. Primarily a tanker. See photo in addenda.

♦ 1 Turkish-designed transport oiler Bldr: Gölçük NSY, 1964

A 572 ALBAY HAKKI BURAK



Albay Hakki Burak (A 572)

L. & L. Van Ginderen, 6-82

D: 1,800 tons (3,740 fl) S: 16 kts Dim: 83.73 × 12.25 × 5.49 A: 2/40-mm AA (I × 2) Electron Equipt: Radar: 1/Decca 707

M: 4 G.M. 16-567A diesels, electric drive; 2 props; 4,400 hp Man: 88 tot.

REMARKS: One liquid-replenishment station on each side. Primarily a transport tanker.

◆ 1 ex-West German Bodensee-class transport oiler Bldr: Lindenau-Werft, Kiel

Laid down L In serv. A 575 Inebolu (ex-Bodensee, ex-Unkas) 24-8-55 19-11-55 11-2-56



Inebolu (A 575) — as the Bodensee

1975

D: 1,237 tons (1,840 fl) S: 13.5 kts Dim: 67.1 (61.2 pp) × 9.84 × 4.27 A: 2/20-mm AA Electron Equipt: Radar: 1/Kelvin-Hughes 14/9 M: 1 MAK 6-cyl. diesel; 1 prop; 1,050 hp Electric: 238 kVA Range: 6,240/12 Man: 21 tot.

Remarks: Former merchant tanker acquired on 26-3-59 for the West German Navy; transferred to Turkey on 25-8-77. Cargo: 1,231 tons. One replenishment station.

♦ 1 Turkish-designed transport oiler Bldr: Taskizak NDY, Istanbul

A 571 YUZBASI TOLÜNAY (ex-Taskizak)



Yuzbasi Tolünay (A 571) — with Pinar-class water tender Y 1216 alongside H. Ehlers, 3-84

D: 2,500 tons (3,500 fl) **S**: 14 kts **Dim**: $79.0 \times 12.4 \times 5.9$

A: 2/40-mm AA (I × 2)

M: 2 Atlas-Polar diesels; 2 props; 1,900 hp

Remarks: Launched on 22-8-50. Has one alongside replenishment station and can replenish over the stern.

♦ 1 ex-U.S. Mettawee-class former gasoline tanker Bldr: East Coast SY, Bayonne, N.J.

Laid down L In serv. A 574 Akpinar (ex-Chiwaukum, AOG 26) 2-4-44 5-5-44 22-7-44

D: 700 tons (2,270 fl) S: 14 kts Dim: 67.21 (64.77 pp) × 11.28 × 3.99

A: 1/76.2-mm DP — 1/40-mm AA — 2/20-mm AA

M: 1 Fairbanks-Morse 37E16 diesel; 1 prop; 800 hp

Electric: 155 kw Fuel: 29 tons

Remarks: Transferred in 5-48. Cargo: 1,365 tons. Very low freeboard restricts use to sheltered waters.

♦ 2 ex-German Rhein-class tenders



Cezayirli Gazi Hasan Paşa (A 579)

G. Arra, 1981

D: A 579: 2,370 tons (2,740 fl); A 580: 2,330 tons (2,930 fl)

S: 20 kts (22 trials)

Dim: A 479: 98.18 (92.80 pp) × 11.80 × 3.90 A 580: 98.80 (92.80 pp) × 11.80 × 3.95

A: 2/100-mm Mod. 1953 DP (I × 2) -4/40-mm AA (I × 4) -70 mines

Electron Equipt: Radar: 1/. . . nav., 1/SGR-105, 1/SGR-103, 2/M 45

M: 6 Maybach (A 580: Mercedes-Benz 839Db) diesels (A 580: electric drive); 2 props; 11,400 hp (A 580: 11,000)

Electric: 2,250 hp Fuel: 334 tons Range: 2,500/16

Man: 98 tot. (accommodations for 40 officers, 170 men)

Remarks: A 579, transferred on 15-11-76, was built as a Type 401 small combatant tender, but was employed as a training ship in the West German Navy; she continues in this latter role in the Turkish Navy. A 577, transferred on 30-9-82, is configured as a Type 402 mine countermeasures support ship and had been in reserve since 1968. A 579 has CP props. Both have 2 M4 directors for the 100-mm guns.

◆ 2 tenders, ex-West German Angeln-class cargo ships

Bldr: Ateliers et Chantiers de Bretagne, Nantes, France

Laid down L In serv. A 586 Ülkü (ex-Angeln, ex-Borée) 17-5-54 9-10-54 20-1-55 A 588 Umurbey (ex-Dithmarschen, ex-Hebé) 20-10-54 7-5-55 17-11-55

D: 2,998 tons (4,089 fl) **S:** 19 kts **Dim:** 90.53 (84.5 pp) \times 13.32 \times 6.2

A: 2/20-mm AA (I \times 2) M: 2 SEMT-Pielstick 6-cyl. diesels; 1 prop; 3,000 hp Electric: 335 kw Range: 3,660/15 Man: 57 tot.

REMARKS: Former French cargo ships acquired for the West German Navy on 27-11-59 and 19-12-59, respectively. A 586 was transferred to Turkey on 28-3-72 and A 588 on 6-10-76. A 586 is used as a patrol-boat tender and A 588 as a submarine tender. A 588's displacement is 3,098 tons (4,189 fl). Cargo: A 586, 2,665 tons; A 588, 2,670 tons. Six 2.5-ton derricks, three holds.

◆ 1 ex-U.S. Portunus-class patrol-boat tender Bldr: Bethlehem Steel, Hingham, Mass.

Laid down L In serv. A 581 Onaran (ex-Alecto, AGP 14, ex-LST 977) 12-12-44 15-1-45 8-2-45

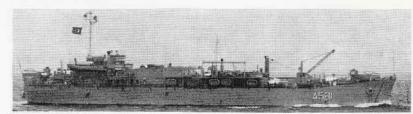
D: 4,100 tons (fl) **S**: 11.6 kts **Dim**: $99.98 \times 15.24 \times 3.4$

A: 8/40-mm AA (IV \times 2) -8/20-mm AA (II \times 4)

M: 2 G.M. 12-278A diesels; 2 props; 1,800 hp Electric: 500 kw

Fuel: 590 tons Range: 9,000/9 Man: 291 tot.

Remarks: Transferred in 11-52. Retains bow doors. Superstructure enlarged after transfer.



Onaran (A 581)

G. Arra, 1971

♦ 1 ex-U.S. Achelous-class submarine tender Bldr: Bethlehem Steel, Hingham, Mass.

Laid down L In serv. A 582 Basaran (ex-Patroclus, ARL 19, ex-LST 955) 22-9-44 22-10-44 13-11-44 Remarks: Former landing-craft repair ship. Data as for Onaran, above, except: Elec-

tric: 420 kw; Fuel: 621 tons. Has less superstructure than Onaran.

♦ 1 ex-U.S. Aegir-class submarine tender Bldr: Ingalls, Pascagoula, Miss.

Laid down L In serv. A 583 Donatan (ex-Anthedon, AS 24) 1943 15-10-43 15-9-44



Donatan (A 583)

L. & L. Van Ginderen, 6-82

D: 16,500 tons (fl) **S:** 18.4 kts (trials) **Dim:** 149.96 (141.73 pp) \times 21.18 \times 8.23 **A:** 3/76.2-mm DP (I \times 3) - 8/40-mm AA (II \times 1, I \times 6) - 8/20-mm AA (I \times 8)

M: 1 set Westinghouse GT; 1 prop; 8,500 hp

Boilers: 2 Foster-Wheeler "D"; 37.2 kg/cm², 407°C Electric: 1,200 kw Fuel: 3,045 tons Man: 1,460 tot.

Remarks: Transferred on 7-2-69. Had been in U.S. Navy Reserve Fleet since 21-9-46. Unarmed at transfer. A helicopter platform has been added over the stern. Reported stricken 1985.

♦ 1 ex-U.S. Dixie-class destroyer tender Bldr: Tampa SB, Tampa, Fla.

A 576 Derya (ex-Piedmont, AD 17) Laid down L In serv. 1-12-41 7-12-42 5-1-44



Derya (A 576)

H. Ehlers, 3-84

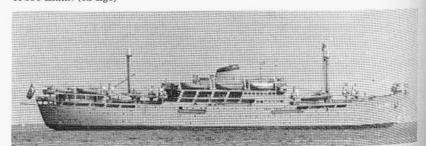
D: 9,450 tons light (17,190 fl) S: 18 kts Dim: 161.70 × 22.33 × 7.80 A: 5/20-mm AA (I × 5) Electron Equipt: Radar: 1/LN-66, 1/SPS-10 M: 2 sets GT; 2 props; 11,000 hp Electric: 3,600 kw

Fuel: 3,680 tons Range: 12,200/12 Man: Approx. 1,200 tot.

REMARKS: Transferred by sale 18-10-82 and recommissioned 29-3-83. Modernized early 1960s under FRAM program to serve as repair tender to missile-equipped ships. Extensive workshops, spares capacity. Two 20-ton cranes. Small helicopter deck.

◆ 1 submarine tender Bldr: A.G. Weser, Bremen (L: 1955)

A 590 ERKIN (ex-Ege)



Erkin (A 590)

H. Ehlers, 5-84

D: 6,700 tons (fl) S: 16 kts Dim: 122.66 (109.86 pp) × 16.57 × 5.79 A: 4/40-mm AA (II × 2) Electron Equipt: Radar: 1/. . . nav.

M: 2 M.A.N. diesels; 2 props; 3,620 hp

Electric: 850 kw Fuel: 1,380 tons Range: 15,950/16 Man: 128 tot.

Remarks: Former 6,042 grt passenger-cargo ship. Acquired 1982 and placed in service 1983 to replace former submarine tender of the same name.

* 1 ex-U.S. AN 103-class net tender Bldr: Krögerwerft, Rendsburg, West Germany

P 305 AG 5 (ex-AN 104)

Laid down 1960 20-10-60 25-2-61

D: 680 tons (975 fl) S: 12.8 kts Dim: 52.50 (48.5 hull; 44.6 pp) × 10.6 × 3.70 A: 1/40-mm AA — 3/20-mm AA (I × 3) M: 1 M.A.N. G7V 40/60 diesel; 1 prop; 1,470 hp

Range: 6,500/10.8 Fuel: 134 tons Man: 5 officers, 45 men

Remarks: Sister to the net layer Thetis in the Greek Navy. Built with U.S. Offshore Procurement funds. Carries 1,600 rds. 40-mm, 25,200 rds. 20-mm ammunition.

 1 ex-U.S. AN 93-class net tender Bldr: Bethlehem Steel, Staten Island, N.Y.

L In serv. P 306 AG 6 (ex-Cerberus, ex-AN 93) 5-52 10-11-52



AG 6 (P 306)

H. Ehlers, 5-84

D: 780 tons (902 fl) S: 12.8 kts Dim: 50.29 (44.5 pp) × 10.20 × 3.2

A: 1/76.2-mm DP-4/20-mm AA (I×4)

M: 2 G.M. 8-268A diesels, electric drive; 1 prop; 1,500 hp

Range: 5,200/12 Man: 48 tot.

REMARKS: Prototype of a class also built in France and Italy. Transferred to the Netherlands in 12-52 and returned 17-9-70; transferred to Turkey the same day.

Bldr: Marietta Mfg. Co., Pt. Pleasant, W. 1 ex-U.S. Aloe-class net tender Va.

Laid down In serv. P 304 AG 4 (ex-Larch, AN 21, ex-YN 16) 18-10-40 2-7-41 13-12-41



AG 4

L. & L. Van Ginderen, 6-82

D: 560 tons (805 fl) S: 12.5 kts Dim: 49.73 (44.5 wl) × 9.3 × 3.56

A: 1/76.2-mm DP - 4/20-mm AA (I × 4)

M: 2 Alco 538-6 diesels, electric drive; 1 prop; 620 hp

Electric: 120 kw Fuel: 80 tons Man: 48 tot.

Remarks: Transferred in 5-46.

• 1 ex-British "Bar"-class net tender Bldr: Blyth DD & SB Co., U.K.

P 301 AG 1 (ex-Barbarian)

Laid down 10-6-37

L 21-10-37

In serv. 16-4-38 D: 750 tons (1,000 fl) S: 11.7 kts Dim: 52.96 × 9.8 × 4.62 A: 1/76.2-mm DP M: diesels; 1 prop; . . . hp Range: 3,100/10 Man: 32 tot. Fuel: 214 tons

REMARKS: Transferred in 1947. Sisters AG 2 (ex-Barbette) and AG 3 (ex-Barfair) were stricken in 1975. Original reciprocating steam propulsion plant replaced by diesels in

• 1 ex-U.S. Bluebird-class submarine-rescue ship

Bldr: Charleston SB & DD Co., Charleston, S.C.

Laid down L In serv. A 584 KURTARAN (ex-Bluebird, ASR 19, 23-6-45 15-2-46 28-5-46 ex-Yurok, ATF 164)



Kurtaran (A 584)

H. Ehlers, 5-82

D: 1,294 tons (1,760 fl) S: 16 kts Dim: 62.48 (59.44) × 12.19 × 4.88 A: 1/76.2-mm DP M: 4 G.M. 12-278A diesels, electric drive; 1 prop; 3,000 hp Electric: 600 kw Fuel: 300 tons Man: 100 tot.

Remarks: Begun as an Achomawi-class fleet tug, but altered while under construction, wooden fenders adding .5 meter to the beam. Carries McCann rescue diving bell and four marker buoys. Transferred on 15-8-50.

1 ex-U.S. Chanticleer-class submarine-rescue ship

Bldr: Moore SB & DD Co., Oakland, Cal.

Laid down In serv. A 585 AKIN (ex-Greenlet, ASR 10) 15-10-41 12-7-42 29-5-43

D: 1,770 tons (2,321 fl) S: 15 kts Dim: 76.61 (73.15 pp) × 12.8 × 4.52 A: 1/40-mm AA — 4/20-mm AA (II × 2) Electron Equipt: Radar: 1/SPS-5

M: 4 Alco 539 diesels, electric drive; 1 prop; 3,000 hp Electric: 460 kw Fuel: 235 tons Man: 85 tot.

Remarks: Loaned on 12-6-70 and purchased outright on 15-2-73. Carries McCann rescue diving bell and four marker buoys.

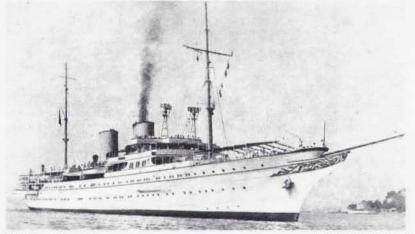
◆ 1 ex-U.S. Diver-class salvage ship Bldr: Basalt Rock Co., Napa, Cal.

Laid down In serv. A 589 Işin (ex-Safeguard, ARS 25) 5-6-43 20-11-43 31-10-44

D: 1,480 tons (1,970 fl) S: 14.8 kts Dim: 65.08 (63.09 pp) × 12.5 × 4.0 A: 2/20-mm AA (I × 2) Electric: 460 kw Fuel: 300 tons Man: 97 tot.

M: 4 Cooper-Bessermer GSB-8 diesels, electric drive; 2 props; 3,000 hp Remarks: Purchased on 28-9-79. Wooden fenders add .6 meter to beam. See photo in addenda.

 1 training ship Bldr: Blohm + Voss, Hamburg, West Germany (L: 28-2-31) A 578 SAVARONA (ex-Gunes Dil)



Savarona (A 578)

J.-C. Bellonne, 1973

D: 5,750 tons (fl) **S:** 18 kts **Dim:** $123.0 \times 16.1 \times 5.6$ **A:** 2/75-mm (I \times 2) -2/40-mm AA (I \times 2) -2/20-mm (I \times 2)

Electron Equipt: Radar: 2/Sperry Mk 2

M: 2 sets GT; 2 props; 8,000 hp Fuel: 2,100 tons Boilers: 4 Range: 9,000/15 Man: 132 crew, 80 midshipmen

Remarks: A former state yacht converted to a cadet-training ship in 1952. Pendant number not painted on. White hull, buff stacks. Has 75-mm guns for saluting. Seriously damaged by fire 3-10-79.

♦ 1 ex-U.S. Cherokee-class fleet tug Bldr: United Eng. Co., Alameda, Cal.

Laid down L In serv. A 587 GAZAL (ex-Sioux, ATF 75) 27-5-42 6-12-42 14-2-42



Gazal (A 587)

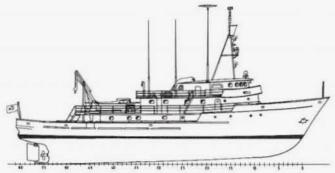
H. Ehlers, 3-84

D: 1,235 tons (1,675 fl) S: 16.5 kts Dim: 62.48 (59.44 pp) × 11.73 × 4.67 A: 1/76.2-mm DP-2/20-mm AA (I × 2) Electric: 260 kw Fuel: 300 tons M: 4 G.M. 12-278 diesels, electric drive; 1 prop; 3,000 hp Man: 85 tot.

REMARKS: Transferred on 30-10-72 and purchased outright on 15-8-73. Can be used for salvage. Similar to submarine-rescue ship Kurtaran (A 584).

Bldr: Gölçük NDY (L: 17-11-83) ◆ 1 oceanographic survey craft

Y 1251 Сивикти



Çubuktu (Y 1251)

Turkish Navy

D: 512 tons (600 fl) S: . . . Dim: 40.4 (36.4 wl) × 9.6 × . . . M: 1 MWM diesel; 1 CP prop; 820 hp

Bldr: Taskizak NDY, Istanbul (In serv. 1970s) • 3 small yard oilers

Y 1231 H 500 Y 1232 H 501 Y 1233 H 503

D: 300 tons S: 11 kts Dim: 33.6 × 8.5 × 1.8

M: 1 G.M. 6-71 diesel; 1 prop; 225 hp Cargo: 150 tons

Remarks: See photos of this and other small Turkish Navy tankers in the addenda.

• 1 small water tanker Bldr: Gölçük Naval DY (L: 1979)

Y 1240

D: 850 tons (fl) S: 10 kts Dim: 51.8 (46.8 pp) × 8.1 × . . . M: 1 diesel; 1 prop; 480 hp Cargo: 530 dwt

 2 Van-class water tankers Bldr: Gölçük NSY, 1969-70

Y 1208 VAN Y 1209 Ulabat

D: 900 tons (1,250 fl) S: 10 kts Dim: 53.1 × 9.0 × 3.0 A: 1/20-mm AA M: 1 diesel; 1 prop; 650 hp Cargo: 700 tons ♦ 1 ex-German FW 1-class water tanker

Bldr: Schichau, Bremerhaven

Y 1217 Sögöt (ex-FW 2)

Laid down 5-4-63

3-9-63

In serv. 4-1-64



Sögüt (Y 1217)

H. Ehlers, 11-85

D: 598 tons (647 fl) S: 9.5 kts Dim: 44.03 (41.4 pp) × 7.8 × 2.63 M: 1 MWM 12-cyl. diesel; 1 prop; 230 hp Electric: 130 kVA Fuel: 15 tons Range: 2,150/9 Man: 12 tot.

Remarks: Transferred on 3-12-75. Cargo: 343 tons of fresh water.

• 4 Pinar-3-class small water tenders Bldr: Taskizak NDY, Istanbul

Y 1213 PINAR 3 Y 1214 PINAR 4 Y 1215 PINAR 5 Y 1216 PINAR 6

D: 300 tons S: 11 kts Dim: 33.6 × 8.5 × 1.8 M: 1 G.M. 6-71 diesel; 1 prop; 225 hp Cargo: 150 tons

• 1 small water tanker Bldr: Gölcük NDY (In serv. 1958)

Y 1212 PINAR 2



Pinar 2 (Y 1212)

H. Ehlers, 5-84

D: 1,300 tons (fl) S: 10 kts Dim: 51.0 × 8.5 × . . . A: None M: 1 diesel; 1 prop; . . . hp Man: 11 tot.

 1 small water tanker Bldr: Meentzer SY, Neth. (In serv. 1938)

Y 1211 PINAR 1 (ex-Istanbul)

D: 490 tons (fl) S: . . . Dim: . . . × M: 1 diesel; 240 hp

• 1 small water tanker

V 1210 MEHMET KAPTAN

REMARKS: No data available.

Bldr: Taskizak NDY, Istanbul (In serv. • 4 Kanarya-class cargo lighters 1972-74)

Y 1157 KARADENIZ ERIGLI Y 1165 ECEABAT Y 1155 KANARYA Y 1156 SARKÖY



Eceabat (Y 1165)

H. Ehlers, 5-84

D: 823 tons (fi) **S:** 10 kts **Dim:** 50.7 $(47.4 \text{ pp}) \times 8.0 \times ...$ **A:** 1/20-mm AA **M:** 1 diesel; 1 prop; 1,440 hp

REMARKS: 500 dwt. Moulded depth: 3.6 m.

• 13 Salopa-class stores lighters

Y 1031-1043 SALOPA 1-13



Salopa 2 (Y 1032)

H. Ehlers, 7-84

REMARKS: No data available.

• 6 Layter-class lighters

Y 1011-1016 LAYTER 1-6

• 7 pontoon barges

Y 1061-1067 PANTON 1-7

♦ 2 transport ferries Bldr: Great Britain, 1940-42

Y 1166 KILYA Y 1168 TUZLA

D: 700 tons (1,102 grt)
 S: 9.5 kts
 Dim: 56.0 × 12.2 × 2.7
 A: 1/20-mm AA
 M: 1 set reciprocating steam; 1 prop; 700 hp

Remarks: Survivors of a class of eleven. Used as personnel and vehicle ferries in the Dardanelles. Ramps at both ends. Can quickly convert to minelayers. Sisters Lapseki (Y 1163) and Erdek (Y 1164) stricken 1983.

• 1 small personnel ferry

Y 1099 GONCA

• 3 vehicle/personnel ferries

Y 1096 İşçi Tasiti 1 — Y 1097 İşçi Tasiti 2 — Y 1110 İşçi Tasiti 3

* 3 Cephane-class ammunition lighters

Y 1194 CEPHANE 1 Y 1195 CEPHANE 2 Y 1197 CEPHANE 3

• 1 small ammunition lighter

Y 1196 BEKIRDERE

• 7 small danbuoy layers

Y 1141-1147 Samandira Motoru 1-7

♦ 1 training craft, ex-British HDML-class patrol craft (In serv. 1943-45)

Y 1221 MESAHA 1

D: 46 tons (54 fl) S: 11 kts Dim: 21.95 × 4.83 × 1.50 M: 2 diesels; 2 props; 320 hp Range: 900/10 Man: 9 tot.

Remarks: Wooden construction. Sisters Mesaha 3 (Y 1223) stricken 1982, Mesaha 2 and 4 (Y 1222, Y 1224) in 1985.

• 1 training craft, tender to Naval Academy

Y 1100 Toros - no further data available. See photo in addenda.

♦ 1 training craft, former minelayer Bldr: Gölçük NSY (In serv. 1938)

Y 1101 ATAK

D: 350 tons (500 fl) S: 13 kts Dim: 44.0 × 7.4 × 3.6

M: 1 Atlas-Polar diesel; 1 prop; 1,025 hp

Remarks: Tender to Naval Academy. See photo in addenda.

• 3 ex-U.S. non-self-propelled gate craft Bldr: Weaver SY, Orange, Texas (In serv. 1960-61)

Y 1201 (ex-YNG 45) Y 1202 (ex-YNG 46) Y 1203 (ex-YNG 47)

D: 325 tons (fl) **Dim:** $33.5 \times 10.4 \times 1.5$

♦ 2 ex-U.S. APL 41-class barracks barges

D: 2,660 tons (fl) Dim: 79.6 × 14.99 × 2.59

Electric: 300 kw Man: 650 tot.

Remarks: Y 1204 was leased in 10-72, Y 1205 in 12-74. Lease extended 1982.

♦ 2 Öncü-class coastal tugs

Bldr: Gölçük NSY (In serv. 1953)

Y 1120 ÖNCÜ Y 1124 ÖNDER



Öncü (Y 1120)

L. & L. Van Ginderen, 1980

D: 500 tons **S:** 12 kts **Dim:** $40.0 \times 9.1 \times 4.0$ **A:** 2/20-mm AA (I \times 2) **M:** diesel; 1 prop; . . . hp

Remarks: Sister Öder (Y 1123) stricken 1971. A new tug, Y 1123, was completed at Taskizak 25-7-85, no data available.

Note: Of the three ex-U.S. Army 254-Design tugs, Kepez (Y 1119) and Öndev (Y 1128) were stricken in 1983 and Akbas (Y 1118) in 1985.

• 1 ex-U.S. coastal tug

Y 1122 KUVVET (ex-. . .)

D: 390 tons S: . . . Dim: 32.1 × 7.9 × 3.6

REMARKS: Transferred in 2-62.

• 1 ex-U.S. Army 320-design small harbor tug

Y 1134 ERSEN BAYRAK

D: 30 tons **S:** 9 kts **Dim:** 13.8 × 3.9 × 1.6 **M:** 1 diesel; 1 prop; 175 hp REMARKS: Transferred in 6-71.

◆ 2 Turkish-designed harbor tugs Bldr: Denizcilik, Bancusi (In serv. 1976)

Y 1130 GOVEN Y 1132 ATIL

D: 300 grt S: . . . Dim: 32.8 × 8.9 × . . . M: Diesels; 250 hp REMARKS: Sister Doğanarslan (Y 1133) stricken 1984.

• 3 ex-U.S. small harbor tugs

Y 1117 SONDUREN (ex-YTL 751) Y 1121 YEDEKCI (ex-YTL 155) Y 1129 KUDRET (ex-YTL . . .)



Kudret (Y 1129)

H. Ehlers, 5-81

D: 100 tons (120 fl) **S:** 12 kts **Dim:** $21.34 \times 5.89 \times 2.21$ **M:** 1 Atlas diesel; 1 prop; 500 hp **Fuel:** 18 tons

REMARKS: Transferred in 5-54 and 11-57.

♦ 18 push tugs (do not have Y-pendants)

KATIR 1-18

♦ 1 battery-charging craft, ex-U.S. Balao-class submarine Bldr: Manito-woc SB, Manitowoc, Wisc.

Laid down L In serv

Y 1243 CERYAN BOTU IV (ex-Preveze, ex-Guitarro, SS 363) Laid down L In serv. 7-4-43 26-9-43 26-1-44

D: 1,810 tons (fl) Dim: 95.0 × 8.31 × 4.65 Electric: 4,700 kw (4 G.M. 16-278A diesels)

Remarks: Former fleet submarine relegated to harbor service during the mid-1970s. Sisters Ceryan Botu I (Y 1240, ex-Canakkale, ex-Bumper, SS 333), Ceryan Botu II (Y 1241, ex-Inici Inönu, ex-Blueback, SS 326), Ceryan Botu III (Y 1242, ex-Cerbe, ex-Hammerhead, SS 364), and Ceryan Botu V (Y 1244, ex-Piri Reis, ex-Mapiro, SS 376) stricken 1985.

♦ 1 ex-U.S. floating crane Bldr: Odenback SB, Rochester, N.Y. (In serv. 14-8-51)

Y 1023 Algarna III (ex-YD 185)

D: 1,200 tons (fl) **Dim:** 36.6 × 13.7 × 2.7

REMARKS: Transferred in 9-63.

♦ 4 miscellaneous floating cranes — no data available, except Y 1022: 600-ton lift

Y 1021 Algarna I Y 1022 Levent Y 1023 Algarna Y 1024 Turgut Alp

♦ 1 dredge

Y 1029 TARAK - D: 200 tons

♦ 27 miscellaneous service launches - no data available

Y 1181 through Y 1193, Y 1198, Y 1199 Mayna 1 through Mayna 15 Y 1052 Takip



Mavna 10 (Y 1190)

H. Ehlers, 5-84

♦ 1 ex-U.S. ARD-12-class floating dry dock Bldr: Pacific Bridge, Alameda, Cal.

Y 1087 (ex-ARD 12) (In serv. 10-43)

Dim: 149.86 × 24.69 × 1.73 (light) Lift capacity: 3,500 tons

REMARKS: Launched in 1943 and loaned in 11-71.

• 6 miscellaneous floating dry docks

Y 1081 (16,000-ton capacity) Y 1082 (12,000-ton capacity) Y 1083 (2,500-ton capacity) Y 1086 (3,000-ton capacity)

Remarks: Y 1083 was built in Turkey in 1958 with U.S. funds; **Dim:** $116.5 \times 26.4 \times 9.0$ max. These docks are named in sequence *Havuz I* to *Havuz VI*. A new 3-section floating dry dock was completed late in 1980.

♦ 4 miscellaneous officers' yachts

ACAR HALAS ERSAN GÜL



Acar

H. Ehlers, 7-83

Remarks: Assigned pendant numbers between Y 1088-1092, but do not bear them.

MINISTRY OF THE INTERIOR COAST GUARD (SAHIL GÜVENLIK)

Personnel (1985): approx. 5,000 total, headed by a Turkish Navy rear admiral

PATROL BOATS

• 0 (+2+...) SAR-37 class

SG 70 SG 71

Remarks: First of an enlarged version of the SAR-33 class in service 25-7-85, with second launched the same day at Taskizak NDY. Have higher superstructure than SAR-33, are 37.5 m o.a.

• 9 SAR-33 class

Bldrs: J 61: Abeking & Rasmussen, Lemwerder, West Germany; others: Taskizak NDY, Istanbul (In serv. 1978-. . .)

SG 61-SG 69 (ex-J 61-J 69)



SG 68 and sisters

H. Ehlers, 4-84

D: 150 tons (170 fl) **S:** 40 kts **Dim:** 33.00 (29.50 wl) × 8.60 × 1.85

A: 1/40-mm AA -2/76.2-mm mg (I \times 2)

M: 3 SACM-AGO V16CSHR diesels; 3 CP props; 12,000 hp

Electric: 300 kw Fuel: 18 tons Range: 450/35; 1,000/. . . Man: 23 tot.

Remarks: Exact number in service as of 1-86 uncertain. SG 61 was launched on 12-12-77 and SG 62 in 7-78; SG 65 through SG 67 in service 30-7-81. Wedge-shaped hull design of remarkable seaworthiness and steadiness at high speeds in heavy weather. Turkey is also building fourteen units of this class for Libya. The same design can accommodate guns of up to 76-mm bore, missiles, and a propulsion plant of up to twice the power of the above. The 40-mm AA is in a Mk 3 mount.

♦ 14 AB 25 class

Bldr: Taskizak NDY, Istanbul, 1972-78

SG 21-34



SG 33

H. Ehlers, 5-84

D: 170 tons (fl) S: 22 kts Dim: 40.24 × 6.4 × 1.65

A: 2/40-mm AA (I \times 2) -2/12.7-mm mg (I \times 2)

M: 2 SACM-AGO V16 CSHR diesels; 2 props; 4,800 hp; 2 cruise diesels; 300 hp

REMARKS: Twelve sisters are operated by the Turkish Navy. Some have one 40-mm AA aft and one 20-mm AA forward. Built with French assistance.

◆ 8 German KW 15 class Bldr: Schweers, Bardenfleth, West Germany, 1961-62

SG 12-SG 16 SG 18-SG 20



SG 15

H. Ehlers, 5-82

TURKEY (continued)
PATROL BOATS (continued)

D: 59.5 tons (69.6 fl) S: 25 kts Dim: 28.9 × 4.7 × 1.42 A: 1/40-mm AA — 2/20-mm (I × 2) M: 2 MTU 12-cyl. diesels; 2 props; 2,000 hp Fuel: 8 tons Range: 1,500/19 Man: 15 tot.

• 10 ex-U.S. 45-ft Picket Boat class

SG 41-50



SG 43

H. Ehlers, 4-84

D: 15 tons (fl) S: 18 kts Dim: 13.94 × 4.17 × 1.10 A: 2/7.62-mm mg (II × 1)

M: 2 Gray Marine 64 HN 9 diesels; 2 props; 450 hp

Range: 200/18 Man: 5 tot.

Remarks: Wooden-hulled. Transferred during the 1950s.

• 2 miscellaneous small personnel ferries

SG 101

SG 104



SG 104

H. Ehlers, 4-84

• 4 miscellaneous launches

SG 51-54

• 1 utility craft

SG 102

• 1 dispatch boat

SG 103

U.S.S.R.

Union of Soviet Socialist Republics

Personnel: 463,000, including 177,000 afloat personnel, 70,000 Naval Aviation, 14,000 Coastal Defense, 16,000 Naval Infantry, 57,000 in training, and 129,000 shore support, plus approx. 20,000 civilians manning auxiliaries

Merchant Marine (1984): 7,095 ships — 24,492 grt (tankers: 442 ships — 5,368,883 grt)

DISPOSITION OF THE SOVIET FLEET ON 1-10-85 (Submarines and major surface combatants)

| (Suomarines and maj | (Submarines and major surface combatants) | | | | | |
|--|---|--------|-----------|------------|-----------|--|
| Strategic Subs: a) nuclear: Typhoon, Delta I, II, III, IV, Yankee I, | Northern 41 | Baltic | Black Sea | Pacific 24 | | |
| II, Hotel III b) conventional: Golf-II, III, V | 2 | 6 | | 7 | 65 | |
| Cruise-Missile Subs: a) nuclear: Oscar, Papa, Charlie-I, II, Echo-II, Yankee b) conventional: Juliett | 28 7 | 3 | 2 | 21 | 49 16 | |
| Torpedo Submarines: a) nuclear: Akula, Mike, Sierra, Alfa, Victor-I, II, III, November, Yankee conv., Echo b) conventional: Kilo, Tango, Foxtrot, Zulu, Romeo, Whiskey | 51 54 | 23 | 24 | 25 48 | 76 149 | |
| Aviation Ships: Kiev, Moskva | 1 | | 2 | 2 | 5 | |
| Guided-Missile Cruisers: Kirov, Kara, Kresta, I, II, Kynda, Slava | 9 | 2 | 5 | 12 | 28 | |
| Gun-cruisers: Sverdlov, Mod. Sverdlov | 2 | 2 | 3 | 4 | 11 | |
| Guided-Missile Frigates and Destroyers: Udaloy, Sovremennyy, Mod. Kashin, Kashin, Provornyy, Krivak I, II, III, Kanin, SAM, Kotlin, Kildin, Mod. Kildin | 23 | 16 | 20 | 25 | 83 | |
| Gun-Destroyers: Mod. Kotlin, Kotlin, Mod. Skoryy, Skoryy | 3 | 7 | 9 | 11 | 30 | |

WARSHIPS IN SERVICE OR UNDER CONSTRUCTION AS OF 1 JANUARY 1986

L Tons

Main armament

♦ 0 (+2) aircraft carriers

0 (+2) new construction

7 VICTOR-II (nuclear)

1985- 50,000(?) 60 aircraft. . . .

♦ 3 (+1) V/STOL carriers

3 (+1) Kiev

1972-82 36,000

Missile launchers, guns, helicopters, VTOL aircraft

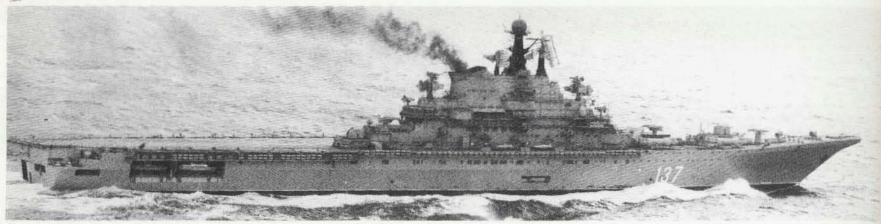
| | | Tons | |
|--|--|----------------------|----------------------------|
| ♦ 374 (+) submarines | | (surfaced) | |
| 78 (+ ,) ballistic-missile (63 | nuclear): | 2 | |
| 4 (+1+) Typhoon (nuclear) | 1980-84 | | 20/SS-N-20, /TT |
| 1 (+3+) Delta-IV (nuclear) | 1983- | 10,500 | 16/SS-N-23, 6/TT |
| 14 Delta-III (nuclear) | 1975- | 10,500 | 16/SS-N-18, 6/TT |
| 4 Delta-II (nuclear) | 1975 | 10,000 | 16/SS-N-8, 6/TT |
| 18 Delta-I (nuclear) | 1972-75 | 9,000 | 12/SS-N-8, 6/TT |
| 1 Yankee-II (nuclear) | 1967? | 7,900 | 16/SS-N-6, 6/TT |
| 21 Yankee-I (nuclear) | 1967-74 | 7,900 | 16/SS-N-6, 6/TT |
| 1 Hotel-III (nuclear) | 1965 | 5,500 | 3/SS-N-8, 8/TT |
| 1 Golf-V (diesel) | 1958-61 | 2,900 | 3/SS-N , 10/TT |
| 1 Golf-III (diesel) | 1958-61 | 2,900 | 3/SS-N-8, 10/TT |
| 13 Golf-II (diesel) | 1958-61 | 2,900 | 3/SS-N-5, 10/TT |
| 65 (+) cruise-missile attack (nuclear): | | | |
| 2 (+) Oscar (nuclear) | 1980- | 11,500 | 24/SS-N-19, 8/TT |
| 1 Papa (nuclear) | 1970 | 6,700 | 10/SS-N-9, 8/TT |
| 6 CHARLIE-II (nuclear) | 1973- | 4,500 | 8/SS-N-7 or 9, 6/TT |
| 11 CHARLIE-I (nuclear) | 1968-72 | 4,000 | 8SS-N-7, 6/TT |
| 1 YANKEE (nuclear) | | | 12/SS-N-24, 6/TT |
| 28 Есно-II (nuclear) | 1960-68 | 5,000 | 8/SS-N-3 or SS-N-12, 10/TT |
| 16 JULIETT (diesel) | 1961-68 | 3,000 | 4/SS-N-23, 10/TT |
| 219 (+) attack: (72 nuclea | r) | | |
| 1 (+) AKULA (nuclear) | 1984- | 6,800 | 6/TT |
| 1 (+) Sierra (nuclear) | 1983- | 6,000 | 6/TT |
| 1 (+) Mike (nuclear) | 1983- | 7,800 | 6/TT |
| 6 Alfa (nuclear) | 1972-81 | 2,800 | 6/TT |
| 21 Victor-III (nuclear) | 1978-85 | 4,800 | 6/TT |
| | The state of the s | A Charles Laboratory | - Manager |

4,500

1972-77

6/TT

WARSHIPS (continued)



| | OSS | | |
|--|-----|--|--|
| | | | |
| | | | |

U.S. Navy, 9-83

| Novorossyisk | | | |
|---------------------------------|---------|--------|---|
| | L | Tons | Main armament |
| 16 Victor-I (nuclear) | 1967-74 | 4,300 | 6/TT |
| 1 (+10) YANKEE (nuclear) | 1967-74 | 7,900 | 6/TT |
| 5 Есно (nuclear) | 1060-68 | 4,500 | 10/TT |
| 1 (+4) Mod. Hotel (nuclear) | 1961 | 5,000 | 10/TT |
| 12 November (nuclear) | 1958-62 | 4,500 | 12/TT |
| 6 (+) KILO (diesel) | 1980- | 2,500 | 6/TT |
| 19 Tango (diesel) | 1972-82 | 3,000 | /SS-N-15, 10/TT |
| 58 FOXTROT (diesel) | 1957-74 | 1,950 | 10/TT |
| 3 Mod. Golf (diesel) | 1958-61 | 2,300 | 10/TT |
| 6 Romeo (diesel) | 1960 | 1,330 | 8/TT |
| 2 Zulu-IV (diesel) | 1952-55 | 1,900 | 10/TT |
| 53 Whiskey (diesel) | 1949-57 | 1,050 | 6/TT |
| 12 auxiliary submarines: | | | |
| 1 Uniform | 1982 | | |
| 1 Xray | 1983 | 1.11 | * 4 . |
| 2 India (diesel) | 1978-79 | 3,900 | 4/4_4 |
| 4 Bravo (diesel) | 1968-72 | 2,400 | 6/TT |
| 1 Lima (diesel) | 1979 | 2,000 | 10 /mm |
| 1 Mod. Echo (nuclear) 2 Zulu | 1960-68 | 5,000 | 10/TT |
| 2 ZULU | 1952-57 | 1,900 | 10/TT |
| ♦ 41 (+3) cruisers | | | |
| 2 helicopter: | | | |
| 2 Moskva | 1964-66 | 14,500 | 2/SA-N-3, 1/SUW-N-1, 14 helicopters* |
| 28 (+3) guided-missile: | | | |
| 2 (+1) Kirov (nuclear) | 1977-81 | 24,000 | 20/SS-N-19, 2/SS-N-14, 12/SA-N-6, 2/SA-N-4, 2/100-mm DP, 10/TT, 3 helos |
| 1 (+2) SLAVA | 1979- | 10,000 | 16/SS-N-12, /SA-N-6, 2/SA-N-4, 2/130-mm* |
| 7 Kara | 1971-78 | 8,200 | 8/SS-N-14, 2/SA-N-3, 4/SA-N-4, 4/76.2-mm DP, 10/TT, 1 helo |
| 10 Kresta-II | 1967-76 | 6,200 | 8/SS-N-14, 2/SA-N-3, 4/57-mm, 10/TT, 1/helo* |
| 4 Kresta-I | 1965-66 | 6,200 | 4/SS-N-3, 2/SA-N-1, 4/57-mm, 10/TT, 1/helo* |
| 4 Kynda | 1961-65 | 4,400 | 8/SS-N-3, 1/SA-N-1, 4/76.2-mm DP, 6/TT* |
| 11 conventional: | | | |
| 2 Mod. Sverdlov | 1950-54 | 12,900 | 1/SA-N-4, 6 or 9/152-mm, |
| 9 Sverdlov | 1950-60 | 12,900 | 12/100-mm DP 12/152-mm, 12/100-mm DP |
| | 200 | | |
| ◆ 66 (+4+) destroyers | 3 | | |
| 49 guided-missile: | | | |
| 7 (+1+) Udaloy | 1978- | 6,700 | 8/SS-N-14, 8/SA-N-9, 2/100-mm DP, 4/30-mm AA, 8/533-mm TT, 2/helos, mines* |
| 5 (+1+) Sovremenny | 1978- | 6,700 | 8/SS-N-22, 2/SA-N-7, 4/130-mm DP, 4/30-mm AA, 4/533-mm TT, 1/helo, |
| 6 Mod. Kashin | 1963-72 | 3,950 | mines* 4/SS-N-2C, 2/SA-N-1, 4/76.2-mm DP, 5/TT* |
| | | | |

| | | | U.S. Navy, 9-83 |
|---|--|------------|--|
| | L | Tons | Main armament |
| 12 Kashin | 1963-72 | 3,750 | 2/SA-N-1, 4/76.2-mm DP, 5/TT* |
| 8 Kanin | 1958-60 | 3,700 | 1/SA-N-1, 8/57-mm, 10/TT* |
| 3 Mod. Kildin | 1958 | 2,800 | 4/SS-N-2C, 4/76.2-mm DP, 16/45- or 57-mm AA, 4/TT* |
| 8 Sam Kotlin | 1955-57 | 2,700 | 1/SA-N-1, 2/130-mm DP, 12/45-mm AA, 5/TT* |
| 17 conventional: | | | |
| 17 Kotlin and Mod. Kotlin | 1954-57 | 2,600 | 4/130-mm DP, 16/45-mm AA, 4 or 8/25-mm AA, 5 or 10/TT* |
| ◆ 197 (+) frigates | | | |
| 2 Krivak III | 1983- | 3,000 | 1/SA-N-4, 1/100-mm, 8 TT*, helo |
| 32 Krivak I, II | 1970- | 3,100 | 4/SS-N-14, 2/SA-N-4, 2/100-mm or 4/76.2-mm DP, 8/T'T* |
| 1 Koni | 1978 | 1,600 | 1/SA-N-4, 4/76.2-mm DP* |
| 33 (+) Grisha-III | 1975- | 950 | 1/SA-N-4, 2/57-mm DP, 4/TT* |
| 9 Grisha-II | 1974-76 | 950 | 4/57-mm DP, 4/TT* |
| 15 Grisha-I | 1967-73 | 950 | 1/SA-N-4, 2/57-mm DP, 4/TT* |
| 20 Petya-II | 1964-69 | 950 | 4/76.2-mm DP, 10/TT* |
| 7 Petya-I | 1960-63 | 950 | 2 or 4/76.2-mm DP, 5/TT* |
| 11 Mod. Petya-I | 1960-63 | 950 | 4/76.2-mm DP, 5/TT* |
| 1 Mod. Petya-II | 1964-69 | 950 | 4/76.2-mm DP, 5/TT* |
| 18 Mirka-I, II | 1964-66 | 950 | 4/76.2-mm DP, 5 or 10/TT* |
| 48 Riga | 1951-56 | 1,260 | 3/100-mm DP, 2 or 3/TT* |
| ♦ 148 (+) corvettes | | | |
| 18 Mirka-I, II | 1964-66 | 950 | 4/76.2-mm DP, 5 or 10/TT* |
| 48 Riga | 1951-56 | 1,260 | 3/100-mm DP, 2 or 3/TT* |
| 12 (+) TARANTUL-I, II | 1979- | 480 | 4/SS-N-2C, 1/76.2-mm DP |
| 24 (+) Nanuchka-I, III | 1969- | 770 | -6/SS-N-9, 1/SA-N-4, 1/76.2 DP or 2/57-mm AA |
| 14 (+) PAUK | 1979- | 480 | 1/76.2-mm DP, 4/TT* |
| 58 Роті | 1960-67 | 500 | 2/57-mm DP, 2-4/TT* |
| 6 Ivan Susanin | 1975-81 | 3,400 | 2/76.2-mm DP |
| 1 Purga | 1955 | 4,500 | 4/100-mm DP |
| 12 Sorum | 1974 | 1,210 | 4/30-mm AA |
| [14] [2] [2] [2] [2] [2] [2] [2] [2] [2] [2 | PROGRAM TO THE PARTY OF THE PAR | | |
| 10 T-58 11 T-43 | 1956-61 1947-57 | 725 500 | 4/57-mm DP* 4/37-mm AA* |

- * Indicates additional ASW weapons
- 173 guided-missile and torpedo units
- over 275 patrol boats and craft
- ♦ 240-260 mine warfare ships and craft
- 73 amphibious warfare ships

A note to ship class names: The class names used herein are for the most part those used by NATO. Until 1973, Soviet combatants usually did not display names, and thus NATO had devised a series of nicknames based on Russian words (combatants: geographical place names beginning with "K"; small combatants: insects; mine warfare types: diminutives of personal names; amphibious warfare types: reptiles; auxiliaries: rivers). Subsequently, the policy has been to use the actual name of the first ship of a class, as in the West. Often that name is not immediately available, and thus a three-part interim nickname is applied. The first syllable denotes the fleet area where the class was first identified (BAL = Baltic, BLK = Black Sea, etc), the second syllable indicates the type of ship (COM = combatant, SUB = submarine, AUX = auxiliary, etc.), and the

WARSHIPS (continued)

third syllable is a roman numeral indicating the order of discovery within a category. Thus, "BAL-COM-III" would be the third new major combatant discovered under construction in the Baltic. As actual names are learned, they replace the temporary nickname. The Soviet Navy itself uses a series of Project Numbers to identify its ships, as in the West German Navy; these are generally not available.

The Soviet Navy has a number of unique ship-type classifications; these are translated, where applicable, in the individual class entries.

WEAPONS AND SYSTEMS

Note: All weapon and sensor designations that follow are those assigned by NATO, except where indicated; the Soviet designations are generally unavailable.

A. MISSILES

· Ballistic Missiles

Note: All have liquid-fuel propulsion, except the SS-N-17 and SS-N-20, which have solid-fuel propulsion.

SS-N-5 Serb (1963)

Range: 900 nautical miles. Single nuclear warhead of about 800 kilotons. Fitted in marines. Can be launched while submerged. Range has been increased from its original 700 nautical miles. Obsolescent but still significant, due to basing of 6 Golf-II in the Baltic.

weight: 16,500 kg range: 900 nm length: 13 m guidance: inertial diameter: 1.2 m

SS-N-6 (1968)

Range: Initially, 1,300 nautical miles. Nuclear warhead of about 1 megaton in Mod. 1, 2; Mod. 3 has two re-entry vehicles. Fitted in Yankee-I-class nuclear submarines. Can be launched while submerged. 1,850-m CEP (Circular Error Probable).

SS-N-8 Sawfly (1973/77)

Single nuclear warhead of about 1.5 megatons. Fitted in Delta-I and -II nuclear submarines and in the Golf-III experimental submarine. 1,500-m CEP (Circular Error Probable).

weight: 30,000 kg length: 13 m diameter: . . . Mod. 2—4,950 n.m. guidance: inertial

SS-N-17 (1977)

Single 1-megaton nuclear warhead. First Soviet ballistic missile with solid-fuel propulsion. Aboard the one Yankee-II-class submarine.

weight: . . . range: 2,000 n.m. length: 10.6 m guidance: inertial

SS-N-18 (1978)

Two-stage missile employed on Delta-III class. Three versions: Mod. 1 with three 100-kiloton (KT) re-entry vehicles (RV), Mod. 2 with one 450-KT RV, and Mod. 3 with 7 Multiple Independent Re-entry Vehicles. CEP (Circular Error Probable) estimated at 1,100 n.m.

weight: 34,000 kg length: 13.6 m | Mod. 2 — 4,350 n.m. guidance: inertial | Mod. 3 — 3,530 n.m.

SS-N-20 (1983)

Three-stage weapon with 6-9 multiple independent re-entry vehicle (MIRV) payload. Range over 4,000 nautical miles. Used by the Typhoon class. CEP estimated at 600 m

weight: 60,000 kg range: 4,300 n.m. length: . . . guidance: inertial

SS-N-23 (1985)

Three-stage weapon with 7 multiple-independent-re-entry-vehicle (MIRV) payload. Range about 5,000 n.m. Used by Delta IV class. Weight: Approx. 40,000 kg

Surface-to-Surface Cruise Missiles

Note: Liquid-fuel propulsion, except for SS-N-7 and 9, which have solid-propellant engines.

SS-N-2 A and B Styx (1958/1964)

Maximum range: 25 nautical miles. Practical range: 16 nautical miles. Liquid propulsion rocket with solid booster. I-band active radar guidance in targeting, with infrared or radar homing in the most recent version, SS-N-2B. Altitude can be preset at 100, 150, 200, 250, or 300 m. 500 kg conventional warhead. Installed in Osa-I and Osa-II guided-missile boats. The SS-N-2B has folding wings.

SS-N-2C (formerly SS-N-11) (1967)

Maximum range: 45 nautical miles. Weight: 2,500 kg; length: 5.8 m; span: 2.8 m. Radar or infrared terminal homing versions. 500 kg warhead. In order to employ fully the

over-the-horizon maximum range of the SS-N-2C, it is necessary to have a forward observer. The SS-N-2C is carried by the destroyers of the Modified Kashin and Modified Kildin classes, by the Tarantul guided-missile corvettes, and by the exported Nanuchka-II-class guided-missile corvettes. Length: 6.5 m.

SS-N-3 Shaddock (A: 1962; B: 1962, C: 1960)

Produced in three versions: SS-N-3A for launch by submarines (Juliett and Echo II classes), with inertial guidance, mid-course correction, and active radar terminal homing: SS-N-3B for Kynda- and Kresta I-class cruisers, with similar guidance; and SS-N-3C with inertial-only guidance, possibly still in use from submarines. SS-N-3 is a variant of the SS-C-1 coast-defense missile.

weight: 5,400 kg span: 5m range: SS-N-3A/B: 250 n.m. length: 10.2 m (SS-N-3C 111.8m) SS-N-3C: 400 n.m.

SS-N-7 Siren (1970)

Maximum range: 35 nautical miles. Conventional warhead. Launched while submerged. Charlie-I-class nuclear-powered attack submarines have eight per ship. 500 kg conventional or nuclear warhead. Weight: 2,900 kg; Length: 7 m.

SS-N-9 (1969)

Inertial guidance, and active radar homing to the target. 500 kg conventional or nuclear warhead. Installed in Nanuchka-I- and III-class guided-missile corvettes and the Sarancha-class hydrofoil. A submerged-launch version is available for the Charlie Iand II and Papa-class submarines. Weight: 3,300 kg; Length: 8.8 m.

SS-N-12 Sandbox (1973)

Maximum range: 300 nautical miles. 1,000 kg conventional or nuclear warhead. Replacing the SS-N-3 on Echo-II-class submarines and is aboard the *Kiev* class and *Slava*-class cruisers.

SS-N-19 (1971)

Maximum range: 300 nautical miles. Conventional or nuclear warhead. Evidently has improved performance characteristics over the SS-N-12 and is carried by the *Kirov*-class cruisers and the Oscar-class nuclear-powered submarine (from which it is submerged-launched).

SS-NX-21 (. . .)

A torpedo-tube-launched weapon similar in concept to the U.S. Tomahawk. Probably intended for submarines, but may be developed for surface ship and air launch as well. Range estimated at 900–1,200 n.m. Speed: Mach 0.7. Will probably become operational by 1986. Probably has a nuclear warhead.

SS-N-22 (1981)

A Mach 2.5 successor to the SS-N-9, but not, to date, used by submarines. Reportedly flies at "sea-skimming" altitudes to a range of 55-68 n.m. Carried by the Sovremennyy-class destroyers and some Tarantul II-class missile boats.

SS-N-24 (1985?)

New, large cruise missile. Used in single Yankee-conversion and probably intended for a new class. May be a strategic, vice anti-ship, weapon. Range: circa 1,000 n.m

♦ Surface-to-Air Missiles

SA-N-1 Goa (1961)

Twin-launcher. Range: 20,000 m, interception altitude: 300 to 50,000 feet. Guidance: radar/command. Conventional warhead, 60 kg. Fitted on Kynda and Kresta-I cruisers, as well as on Kashin, Kanin, and Kotlin destroyers. Also has a surface-to-surface capability. Uses Peel Group radar directors. Weight: 400 kg. Sixteen per magazine.

SA-N-3 Goblet (1967)

Twin launcher. Range: 30,000 m, interception altitude: 300 to 80,000 feet. Guidance: radar/command via Head Lights-series radar director. Conventional warhead, 60 kg. Fitted on Kresta-II and Kara cruisers as well as the *Moskva*-class helicopter cruisers. An improved version has a range of 55,000 m and is on the *Kiev*. Goblet has an anti-surface target capability. Weight: 550 kg. Mach 2.5.

SA-N-4 Gecko (1969)

Twin launcher, retracting into a cylindrical magazine holding 20 missiles. Range: 9,000 m, interception altitude: 30 to 10,000 feet. Guidance: radar/command via Pop Group radar director. Conventional warhead. Fitted in Kara and Kirov cruisers, two Sverdlov cruisers, Krivak guided-missile frigates, Grisha- and Nanuchka-class corvettes, the Sarancha hydrofoil, the landing ship Ivan Rogov, and the replenishment ship Berezina. Can be used against surface targets. Weight: 190 kg.

SA-N-5 Grail (1974)

Naval version of SA-7 Grail. Fitted on Pauk- and Tarantul-class corvettes, some Osa-class guided-missile patrol boats, landing ships, some minesweepers, and many auxiliaries. Employs either a 4-missile launch rack with operator, or is shoulder-launched, singly. IR-homing, visually aimed. 4.4-km range, 7,800-ft altitude. Weighs 15 kg with launch tube.

SA-N-6 Grumble (1981)

A navalized version of the land-based SA-10. Range 80,000 m or greater, altitudes to 90,000 ft. Employs vertical launch from 8-missile rotating magazines and reportedly uses track-via-missile guidance via the Top Dome radar system. Carried by the *Kirov* and *Slava*-class cruisers. Probably also has an anti-ship capability.

SA-N-7 Gadfly (1981)

A navalized version of the land-based SA-11, employing single-armed launchers. Mach 3 weapon with 28,000-m range (3,000 minimum) and usable against targets from 100- to 46,000-ft. altitude. Operational on the Sovremennyy-class destroyers and the trials destroyer Provornyy. Guidance via Front Dome radar tracker/illuminators. Probably has an anti-ship capability.

SA-N-9

A new vertically launched, short-ranged system, probably intended as a successor to SA-N-4. To be carried in groups of 8 in 2-m-diameter launch cylinders aboard the Udaloy-class destroyers, and to be fitted in cruiser Frunze, carrier Novorossiysk and other new construction. Range estimated at 15-16 km and altitude at 40-60,000 ft.

· Air-to-Surface Missiles (naval use only)

AS 2 Kipper (1961)

Range: 100 nautical miles. Turbojet propulsion. Inertial guidance or automatic pilot with radar homing head. 1,000 kg. Conventional or nuclear warhead. Launched from Badger-C and -G aircraft. Weight: 4,200 kg.

AS 4 Kitchen (1967)

Range: 170 nautical miles. 1,000 conventional or nuclear warhead. Inertial guidance with radar-terminal homing. Mach 3.5. In service on Backfire-B and Blinder-B aircraft. Weight: 6,500 kg.

AS 5 Kelt (1965)

Range: 100 nautical miles. Liquid-fueled rocket propulsion. Inertial or autopilot guidance with J-band radar terminal homing. Conventional and nuclear warheads. In service on Badger-C and -G aircraft. Weight: 4,700 kg.

AS 6 Kingfish (1970)

Range: 150-250 nautical miles. Mach 2.5-3.5. 500 kg. conventional or nuclear warhead. In service on Badger-C and -G aircraft, two on each. Weight: 4,900 kg.

Range: 6 nautical miles. Mach 1. Tactical weapon. Solid-fuel propulsion. Pencil-beam radar terminal homing. 100 kg. conventional warhead. Used on Forger aircraft.

AS 9 (late 1970s)

Range: 60 nautical miles. Anti-radar missile. Turbojet propulsion; Mach 3.0. Passive homing on electromagnetic radiation. 150 kg. Conventional warhead. In use on Badger, Backfire, and Fitter-C and Fitter-D aircraft.

AS 10 (1980)

Range: 6 nautical miles. Mach 1.0. Solid propulsion. Electro-optical guidance. Conventional warhead of 100 kg. Carried by Fitter-D.

B. GUNS

152-mm dual-purpose

Fitted in triple turrets on Sverdlov-class cruisers. Individual barrels can be loaded and elevated separately. Limited AA capability, using barrage fire.

barrel length: 57 calibers

effective range: 18,000 m

projectile weight: 50 kg fire control: optical directors with two 8-m

muzzle velocity: 915 m/sec altitude arc: -5° to +50° maximum rate of fire: 4 to 5 rds/min/barrel maximum range: 27,000 m

base range finders and associated Top Bow ranging radars or local control using 8-m base range finders in each turret and Egg Cup ranging radars atop upper tur-

rets.

130-mm twin, new model dual-purpose

Fully automatic, for surface and aerial targets. Fitted on Sovremennyy-class destroyers, Slava-class cruisers and Frunze. May be mechanically triaxially stabilized.

Water-cooled. barrel length: 70 calibers

max, rate of fire: 65 rds/min per mount max. range: approx. 28,000 m

muzzle velocity: . . are of elevation: -15° to +85°

fire control: Kite Screech radar director or local control by on-mount operator.

130-mm twin dual-purpose

Semi-automatic. Fitted on Kotlin and SAM-Kotlin destroyers. Mechanically triaxially stabilized. Twin mount with electric or hydraulic-electric pointing system.

barrel length: 58 calibers muzzle velocity: 900 m/sec maximum range, surface target: 28,000 m effective range: surface target: 16,000 to

18,000 m

arc of elevation: -5° to +80° maximum rate of fire: 10 rounds/min/ maximum vertical range: 13,000 m projectile weight: 27 kg

Fire control: stabilized Wasp Head director, with Sun Visor tracking radar. Egg Cup ranging radar on most mounts.

130-mm twin dual-purpose

Semi-automatic type fitted on Skoryy-class destroyers. Obsolescent. barrel length: 50 calibers muzzle velocity: 875 m/sec arc of elevation: -5° to +45°

maximum range: 24,000 m effective range: 14,000 to 15,000 m projectile weight: 27 kg

maximum rate of fire: 10 rounds/min/barrel

Fire control: Four Eyes optical director and associated Top Bow or Post Lamp

100-mm twin dual-purpose

Mechanically triaxially stabilized mounts installed on Sverdlov-class cruisers.

barrel length: 50 calibers

arc of elevation: -15° to 85°

weight: approx. 40 tons

maximum rate of fire: 15 rounds/min/ barrel

muzzle velocity: 900 m/sec

effective range, surface target: 10,000 maximum range, surface target: 20,000 m to 12,000 m

maximum range, AA fire: 15,000 m

effective range, AA fire: 8,000 to

9,000 m

projectile weight: 16 kg

fire control: Round Top stabilized director with Sun Visor tracking radar and/or associated Top Bow or Post Lamp radars: Egg Cup ranging radar on each mount (being removed) for local surface control.

100-mm automatic dual-purpose

A single-barreled, water-cooled gun in an enclosed mounting found on the cruiser Kirov, Udaloy-class destroyers, and Krivak-II-class frigates.

rate of fire: 80 rounds/min

maximum theoretical range: 15,000 m

maximum effective range: 8,000 m

fire control: Kite Screech radar director or local, on-mount control

100-mm single dual-purpose

Gunmount with a shield. Installed on Riga frigates, and Don-class submarine tenders. maximum rate of fire: 15 rounds/min

barrel length: 56 calibers maximum range: 16,000 m muzzle velocity: 850 m/sec effective range: 10,000 m

arc of elevation: -5° to +40° projectile weight: 13.5 kg

fire control: stabilized Wasp Head director fitted with Sun Visor radar

85-mm AA

Twin-barreled gunmount on unmodified Skoryy destroyers. Obsolescent.

barrel length: 50 calibers muzzle velocity: 850 m/sec arc of elevation: -5° to +70°

maximum rate of fire: 10 rounds/min/barrel

maximum range, surface target: 15,000 m

effective range, surface target: 8,000 to 9,000 m

practical maximum range, AA fire: 6,000 m

fire control: Cylinder Head optical director (no radar).

76.2-mm twin dual-purpose

Installed on Kara and Kynda cruisers, Kashin destroyers and Krivak-I, Koni, Petya, and Mirka frigates, Smol'nyy-class training ships and Ivan Susanin-class icebreakers.

length of barrel: 60 calibers muzzle velocity: 900 m/sec

maximum rate of fire: 45 rounds/min/barrel

arc of elevation: +80°

fire control: Owl Screech or Hawk Screech radar director

maximum range, AA fire: 10,000 m

effective range, AA fire: 6,000 to 7,000 m

projectile weight: 16 kg

76.2-mm single automatic dual-purpose

Fully automatic, with on-mount crew. Carried by Nanuchka-III, Pauk, and Tarantulclass corvettes, Matka-class guided-missile hydrofoils, and the Slepen-class patrol boat.

rate of fire: 120 rounds/min theoretical maximum range against surface target: 14,000 m

practical range against aerial target: 6,000 to 7,000 m

fire control: Bass Tilt radar director or local, on-mount control

57-mm twin automatic dual-purpose

This equipment, which appears to be entirely automatic from the ammunition-handling room to the gunmount, is installed on Moshva, Kresta-I, and Kresta-II cruisers, Poti and Grisha corvettes, Nanuchka-I guided-missile corvettes, Turya torpedo boats, Ropucha LSTs, Ugra submarine tenders, and the replenishment ship Berezina. Now removed from Boris Chilikin replenishment ships and Manych-class water tankers. Water-cooling system.

length of barrel: 70 calibers

maximum rate of fire: 120 rounds/min/barrel maximum effective vertical range: 5,000 to 6,000 m fire control: by Muff Cob or Bass Tilt radar directors

57-mm dual-purpose

Single-barrel gunmount (Mod. Skoryy destroyers and some Sasha minesweepers), twin-barrel (several classes), and quadruple on Kanin and Kildin destroyers; in the latter case the guns are mounted in superimposed pairs. Has surface-fire capability.

length of barrel: 70 calibers muzzle velocity: 900 to 1,000 m/sec arc of elevation: 0° to +90°

maximum rate of fire: 150 rounds/ min/gun

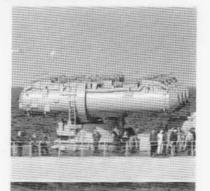
effective vertical range: 4,500 m fire control by Hawk Screech or Muff Cob radar directors



Twin 57-mm DP mounts on oiler Berezina



Twin 76.2-mm DP mounts on Krivak-I



Quadruple SS-N-3b trainable launcher on a Kynda



Inclined, below-decks SS-N-19 launchers on Kirov



SS-N-3b/c Styx launcher on an Osa-II



SS-N-3b/c Styx launcher on a Mod. Kildin



Quadruple SS-N-22 launchers on Sovremennyy



Quadruple, trainable SS-N-14 launchers on Krivak-I and -II



Twin, elevatable SS-N-12 launchers on a Kiev-class carrier



Twin, fixed-elevation SS-N-12 launchers on Slava



SUW-N-1 launcher and missile on Moskva



RBU-1000 ASW rocket launcher on Sovremennyy



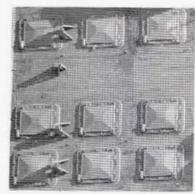
Twin 130-mm DP mount on a Sovremennyy



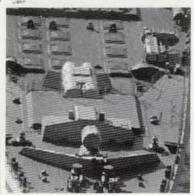
SS-N-2b/c Styx launchers on a Tarantul-II



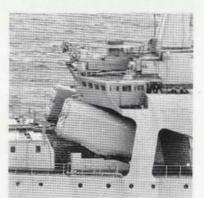
Raised SA-N-4 launcher on a Krivak



SA-N-6 vertical-launch hatch covers on Kirov



Twin, reloading SS-N-14 launcher on Kirov



Quadruple, fixed SS-N-14 launchers on Udaloy



Top Steer back-to-back earlywarning/3-D antennas on Sovremennyy



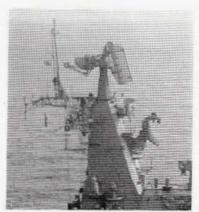
Top Steer/Top Plate on Osmotritel'nyy



RBU-6000 ASW rocket launcher on a Krivak



SA-N-3 launcher with Goblet missile on Moskva



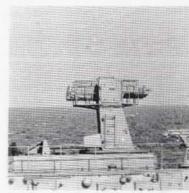
Front Door on the forward side of Slava's tower mast



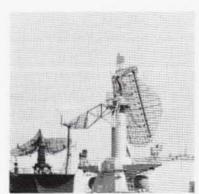
Big Net early-warning radar antenna on a Kashin



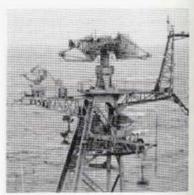
Rotating SA-N-6 vertical launchers on Slava



SA-N-7 single-arm launcher on Sovremennyy



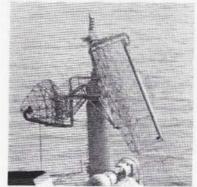
Top Sail (right) and Head Net-C antennas on a Kresta-II



Strut Pair search antenna on Udaloy



Forward four SA-N-9 verticallaunch positions on Udaloy



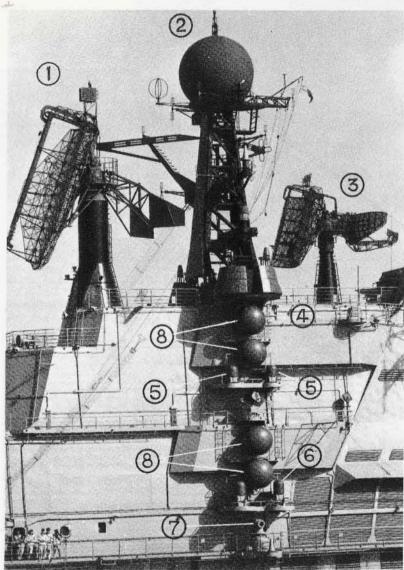
Top Pair back-to-back earlywarning/3-D antennas on Slava



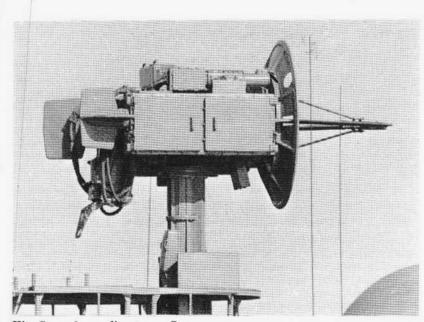
Top Plate/Top Mesh on Admiral Zakharov (above Round House TACAN antennas)



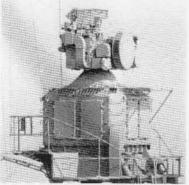
Eye Bowl SS-N-14/missile-control radar directors on a Krivak



Kiev 1. Top Sail 3-D radar 2. Top Knot TACAN radome with High Pole-B IFF transponder atop 3. Top Steer 3-D radar 4. Rum Tub ESM antennas 5. Bell Bash jammer antennas 6. Bell Thump jammer radome 7. Tee Plinth electro-optical device with conical Pert Spring radome just below it 8. Side Globe EW radomes



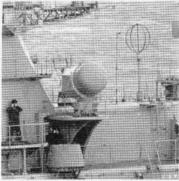
Kite Screech gun director on Sovremennyy



Pop Group SA-N-4 radar director on a Krivak



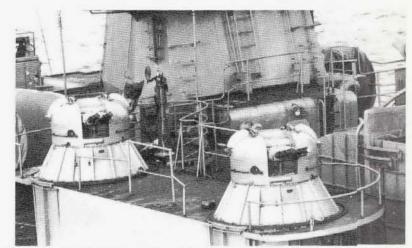
Peel Group radar director for SA-N-1, on a Kashin



Front Dome SA-N-7 radar director on Sovremennyy



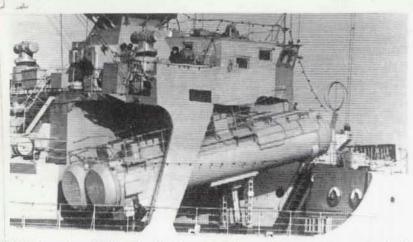
Top Dome SA-N-6 radar director on Kirov



Two twin AK-230 30-mm AA and their manual ring sight director on a Kaninclass destroyer

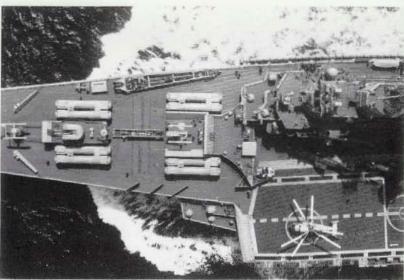


76-mm DP gun on a Nanuchka-III corvette



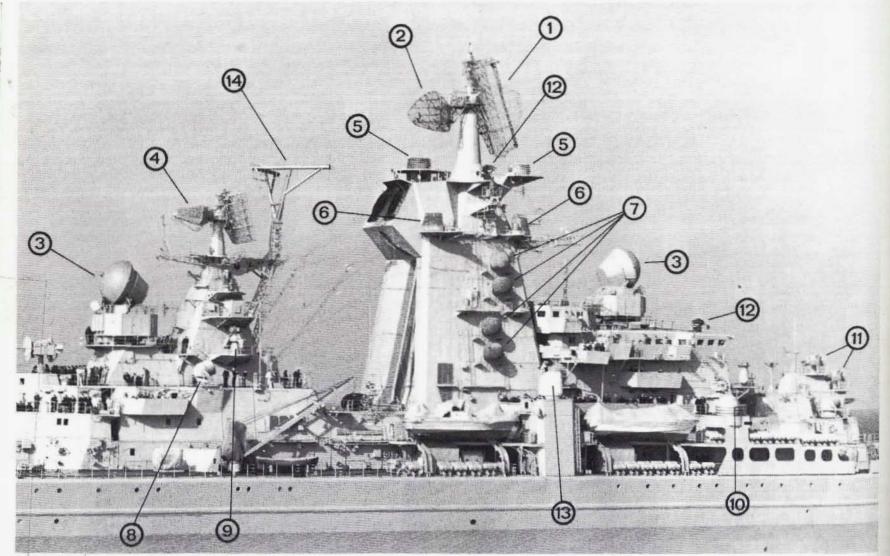
SS-N-3 cruise-missile tubes in elevated, firing position on a Kresta-I missile cruiser

U.S. Navy



A vertical view of the forward missile area on the Kiev-class Novorossiysk, showing the reloading tray arrangements of the 8 SS-N-3 SSM tubes and the blanking plate over where the circular SA-N-4 SAM magazine had been in her earlier sisters. The SUW-N-1 launcher, forward twin 76-mm DP gunmount, and forward SA-N-3 launcher are also visible.

French Navy, 1983



Electronic antennas on the Kirov — 1. and 2. Top Pair 3-dimensional long-range air-search radar, comprising Top Sail (1) and Big Net (2) antennas 3. Top Dome SA-N-6 guidance radar 4. Top Steer 3-dimensional air-search radar. 5. Round House helicopter-control/TACAN arrays 6. Rum Tub EW radomes 7. Side Globe EW radomes 8. Bass Tilt 30-mm gatling gun-control radar 9. Tin Man stabilized t.v./IR tracker 10. Bob Tail (in aluminized rubber protective cover) radionavigation sextant (with Pop Group radar for SA-N-4 SAM system just above) 11. Eye Bowl control radars for SS-N-14 ASW cruise missiles 12. Palm Frond surface-search radar 13. Punch Bowl satellite communications antenna radome 14. Vee Tube-C long-range HF communications antenna array



Towed variable-depth sonar partially deployed from a Krivakclass frigate; the equipment has, in this instance, suffered a casualty to the hoist system.



Helicopter-type dipping sonar being deployed from a Mirka-IIclass frigate. Note the circular covers over gas-turbine exhausts and the towed torpedo decoys on deck.

45-mm AA

Quadruple-barreled installations in SAM-Kotlin, Kotlin, and one Mod. Kildin destroyers; single on some Sasha minesweepers. The quadruple-mounted guns are arranged in two superimposed pairs.

length of barrel: 85 calibers muzzle velocity: 900 m/sec arc of elevation: 0°-to +90° rate of fire: 300 rounds/min/mount effective maximum vertical range: 4,000 m fire control: Hawk Screech radar director (local in Sasha)

37-mm Model 39 AA

Installed in twin-barreled mounts in Sverdlov cruisers, Skoryy destroyers, Riga frigates, and T-43-class minesweepers.

length of barrel: 60 calibers muzzle velocity: 900 m/sec arc of elevation: 0° to +80°? maximum rate of fire: 160 rounds/min/gun fire control: on-mount lead-computing sights

30-mm gatling gun AA

This gun is in service on *Kiev*-class carriers, Kara and Kresta-II cruisers, and several other classes. It is installed in mounts similar to those of the 30-mm AA double-barreled automatic guns, and is designed to fire a great number of rounds at an extremely high rate in order to intercept a cruise missile at a comparatively short distance. It has six 30-mm barrels. The often-used designation "ADMG-630" is a NATO nickname, not the Soviet name, which is probably AK-630.

minimum rate of fire: 3,000 rounds/min/mount

fire control: Bass Tilt radar director or remote visual director

30-mm twin automatic AA

Installed in a light mount on several classes of ships—cruisers, destroyers, guided-missile boats, supply ships, etc. Widely exported. Soviet designation: AK-230.

length of barrel: 60 calibers muzzle velocity: 1,000 m/sec maximum rate of fire: 1,050 rounds/min/barrel

effective maximum range, AA fire: 2,500 to 3,000 m fire control: by Drum Tilt radar director or remote optical director.

.

25-mm twin AA

Found on many ships and made up of two superimposed guns.

length of barrel: 60 calibers muzzle velocity: 900 m/sec maximum rate of fire: 150-200 rounds/min/

fire control: on-mount ring sights

C. ANTISUBMARINE WEAPONS

• missiles

SUW-N-1 system (1967)

Rocket-propelled weapon, installed in *Kiev-*class carriers and *Moskva-*class helicopter cruisers. Maximum range: 16 miles. Nuclear warhead. Unguided solid-fuel rocket based on land-based FROG-7 artillery rocket and often referred to as FRAS-1. There may be a variant with a homing torpedo payload.

SS-N-14 Silex (1974)

A weapon conceptually resembling the Australian Ikara, using a solid-propelled aerodynamic cruise missile that drops a parachute-retarded homing to rpelo. Maximum range: 30 nautical miles (4 nautical miles minimum). Carried by \widetilde{Kirov} , Kara- and Kresta-class cruisers and Krivak-I- and Krivak-II-class frigates. Can also be used against surface ships. Controlled by Head Lights or Eye Bowl radar directors.

SS-N-15 (1972)

ASW missile similar to the U.S. Navy's SUBROC. Maximum range: 21.6 nautical miles. Nuclear warhead. Submerged-launched from submarine torpedo tubes. Carried by Victor I, II, and III and Alfa-class nuclear-powered attack submarines. Also usable against surface targets. Uses a 533-mm torpedo tube.

SS-N-16 (circa 1980)

Derived from the SS-N-15 system but using a homing torpedo payload in lieu of the nuclear depth bomb. Maximum range: 54 nautical miles. Would also be useful against surface targets. Probably requires a large-diameter 650-mm torpedo tube.

* rockets

Note: RBU = Raketnaya Bombometnaya Ustanovka (Rocket Depth-charge Launcher)

RBU-6000 (Soviet designation)

Formerly MBU-2500 A. Made up of twelve barrels, approximately 1.600 m in length, arranged in a horseshoe and fired in paired sequence. Vertical automatic loading system, barrel by barrel. Can be trained and elevated. Range: 6,000 m. Installed in Kiev-class carriers, Slava, Kirov, Moskva, Kynda, Kresta-I, and Kresta-II cruisers, Udaloy, Kashin, and Kanin guided-missile destroyers, Krivak frigates, the smaller Mirka and Petya frigates, and the Poti and Grisha corvettes.

RBU-2500 (Soviet designation)

Made up of two horizontal rows of eight barrels each, approximately 1.600 m in length, which can be trained and elevated. Manual reloading. Range: 2,500 m. 21-kg warhead. Carried by Kildin and Mod. Kildin, one SAM Kotlin, most Mod. Kotlin, and all Mod. Skoryy destroyers, Riga frigates, Petya-I frigates, and Smol'nyy training ships.

RBU-1200 (Soviet designation)

Made up of two horizontal rows of short, superimposed barrels, three on two. Tube diameter: 0.250 m; length: 1.400 m; the 70-kg (34-kg warhead) rocket is somewhat shorter. Range: 1,200 m. Tubes elevate but are fixed in train. Installed in T 58- and Pauk-class corvettes, S.O.-1 patrol boats, and Natya-class minesweepers.

RBU-1000 (Soviet designation)

Made up of six barrels arranged in two vertical rows of three and fired in order, with vertical automatic loading. Trainable. Tube diameter: approx. 0.300 m. Length: approx. 1.800 m. Range: 1,000 m. 90-kg rocket with 55-kg warhead. Installed in Kara, Kresta-I, and Kresta-II cruisers, Sovremennyy and Kashin destroyers, and the replenishment ship Berezina.

RBU-600 (Soviet designation)

Made up of six barrels, 0.300 m in diameter and 1.500 in length, superimposed in two rows and fired simultaneously. Trainable. Range: 600 m. 90-kg rocket with 55-kg warhead. Used only in Mod. Kotlin destroyers.

torpedoes

The Soviet Navy uses 533-mm anti-surface and ASW torpedoes, and short 400-mm ASW homing torpedoes. A larger, probable 650-mm-diameter weapon with a range of around 54 n.m. is also reported to have entered service for submarines, using a wakehoming sensor. Nuclear warheads are apparently widely deployed, especially in submarines, as witness their presence aboard the Whiskey-class submarine that ran aground near Karlskrona Naval Base in Sweden during 10-81.

D. RADARS

Note: Designations are NATO code names.

· Navigation

The most widely used are the I-band Neptune, Ball End, various Don types, and Spin Trough. Don-Kay was placed on most large ships in the 1970s, until it was succeeded by the I-band Palm Frond. Kivach 3 is used on recent small combatants.

· Surface-Search

Most common on small surface combatants are Square Tie (also used for cruise-missile target-designation), Pot Head, and Pot Drum. Submarines carry Snoop Tray, Snoop Slab, Snoop Plate, or Snoop Pair.

♦ Long-Range Air-Search

Cross Bird, still carried by some Skoryy-class desroyers. Copy of British World War II Type 291 gear — Soviet name: Gius-2. (P-band, 225-390 mHz)

Head Net-A (C-band, 500-1,000 mHz)

Head Net-B, consisting of 2 Head Net-A antennas, mounted back-to-back in a horizontal plane (found only on Desna-class missile range ships).

Head Net-C, consisting of 2 Head Net-A antennas, mounted back-to-back, one in a

horizontal plane, the other inclined. Widely used on cruisers and destroyers.

These radars use a band that gives a 60- to 70-mile detection range on an attack

bomber flying at high altitude. **Big Net**, a large C-band radar fitted on Kresta-I and a few *Sverdlov* cruisers, and some Kashin destroyers. Its detection range on an aircraft is probably over 100 miles.

Slim Net (E-band), early model radar fitted on some cruisers and destroyers.

Hair Net (E-band, 2-3,000 mHz), early model radar now only on one Riga frigate. Top Trough (C-band), on some Sverdlov cruisers.

Knife Rest A/B (A-band, 0-250 mHz), antenna resembles a large television antenna.

Strut Curve (F-band, 3-4 mHz), mounted on the Petya and Mirka frigates and Poti and Grisha corvettes.

Strut Pair (F-band), mounted on *Udaloy* class and one Mod. Kildin destroyer. Employs pulse-compression. Antenna essentially two Strut Curve reflectors back-to-back.

Plank Shave (. . . band) on Pauk-class corvettes. An apparent successor to Strut Curve.

High Sieve. Carried by some Sverdlov cruisers and Skoryy destroyers.

Top Pair (C/F-band), three-dimensional; a Top Sail and a Big Net antenna mounted back-to-back; used on Kirov.

Top Plate/Top Mesh, Back-to-back, identical phased-array 3-dimensional radar antenna on Udalov-class destroyers Marshal Vasilevskiy, Admiral Zakharov, and later.

Top Plate/Top Steer, Back-to-back, 3-dimensional radar antenna using one Top Steer and one Top Plate antenna; on Sovremennyy-class destroyer Osmotritelnyy and later.

Top Sail (C-band), three-dimensional radar installed in Kiev, Moskva, Kresta-II, and Kara cruisers.

Top Steer (F-band), three-dimensional radar found with Top Sail on Kiev. Possibly for air-controlling.

Missile Tracking and Control

Trap Door, in a retractable mount. Used for SS-N-12 on *Kiev*-class carriers, where it is mounted at the extreme bow; the similar Front Door/Front Piece is used on Echo-II and Juliett submarines for SS-N-3 and SS-N-12.

Peel Group, mounted on Kynda and Kresta-I cruisers as well as Kashin, Kanin, and SAM Kotlin destroyers. Consists of a tracking radar for high altitudes (I-band) and a missile-guidance radar at lower altitudes (E-band). The assembly is made up of two groups of large and small reflectors, in both horizontal and vertical position, with parabolic design. Maximum range approximately 30 to 40 miles. Used for guidance of the Goa missile in the SA-N-1 system.

Head Lights (F-, G-, H-, and D-bands), mounted in Kiev carriers and Moskva, Kresta-II and Kara cruisers. Similar to the Peel Group with an assembly of tracking radar for the target and guidance radar for the missile. Used for guidance for the Goblet missile of the SA-N-3 system and for the surface-to-underwater missiles of the SS-N-14 system. In several versions, designated "A," "B," and "C."

Scoop Pair (E-band), guidance radar for the Shaddock missile of the SS-N-3 system on board Kynda and Kresta-I cruisers.

Pop Group (F-, H-, and I-bands), missile guidance for the SA-N-4 system.

Eye Bowl (F-band), smaller version of Head Lights, installed in the cruiser Kirov, Udaloy destroyers, and Krivak frigates; missile-guidance radar for the SS-N-14 system.

Fan Song E, installed in the *Dzerzhinskiy*; used with the Guideline missile of the SA-N-2 system.

Band Stand, on Sovremennyy destroyers, Tarantul-II, and Nanuchka corvettes and the Sarancha hydrofoil, possibly for missile-tracking and control. In large radome.

Top Dome, associated with the SA-N-6 vertically launched SAM system in the cruiser *Kirov*. Employs a 4-m diameter hemispheric radome, fixed in elevation, but mechanically steerable in azimuth. Three smaller dielectric radomes are mounted on the face of its mounting pedestal, and there is also a smaller hemispheric radome below it. Apparently can track multiple targets.

Front Dome, tracker-illuminator associated with the SA-N-7 SAM system in the Sovremennyy-class destroyers (with six) and the trials Kashin, Provornyy (with eight).

Resembles the gun fire-control radar Bass Tilt and is very compact.

Plinth Net, a large parabolic mesh antenna found only in the Kresta-I and Kyndaclass cruisers and apparently associated with the SS-N-3 anti-ship missile. May be a data link antenna rather than a radar.

♦ Gun Fire-Control

Half Bow Post Lamp (I-band), mounted on older destroyers: also for torpedo fire control.

Top Bow, 152-mm gun.

Sun Visor, 130-mm DP, 100-mm DP guns; mounted on Round Top or Wasp Head directors.

Hawk Screech, 45-mm and 76.2-mm AA guns; always found in conjunction with back-up optical directors.

Owl Screech, 76.2-mm DP; improved version of Hawk Screech.

Kite Screech, 100-mm and new 130-mm twin DP.

Muff Cob (H-band), for 57-mm AA twin automatic guns. Has t.v. camera attachment.

Egg Cup (E-band), installed in turrets for 152-mm, old twin 130-mm, and old twin 100-mm AA guns

Drum Tilt (H- and I-bands), installed on Osa missile boats and other ships fitted with 30-mm twin-barrel AA.

Bass Tilt (H-band), used with Gatling gun fitted in *Kiev* carriers, Kara and Kresta-II cruisers, and Mod. Kildin destroyers, as well as in Grisha-III corvettes, where it also controls the twin 57-mm, and on Nanuchka-III corvettes and Matka guided-missile hydrofoils, where it also controls the 76.2-mm gun.

E. SONARS

Until the late 1950s, the Soviet Navy showed little interest in antisubmarine warfare or, of course, submarine detection. Most of its ships were equipped with high-frequency sonar (Tamir 11, Pegas, Herkules). New or modernized ships appear to have much-improved sensors.

Medium-frequency hull sonar, on Kresta-II cruisers, Kanin destroyers, Krivak frigates, and Grisha corvettes.

Medium-frequency, towed, variable-depth sonar, on Kiev carriers, Moskva and Kara cruisers, Mod. Kashin destroyers, and Krivak frigates.

Low-frequency hull sonar, on Kiev carriers and Moskva cruisers, the cruiser Kirov and Udaloy destroyers. A low frequency variable-depth sonar is used on the Kirov and Udaloy classes.

Helicopter dipping sonar, on Mirka frigates, Stenka and Pchela patrol boats, Turya torpedo boats and others. Most diesel submarines still have old equipment (active-passive Herkules, passive Feniks), but nuclear submarines have modern low-frequency sonar and extensive passive hydrophone arrays.

The Soviets are interested in surface-ship-towed passive sonar arrays. There are a number of prototype arrays on surface ships that may be for towed linear hydrophone arrays, and the teardrop-shaped domes on the upper rudder assemblies of Victor III-class, Akula- and Sierra-class submarines may house a towed array, while the Delta-IV and Oscar classes may deploy arrays from a tube at the top of the rudder.

F. ELECTRONIC WARFARE

The increasing number of radomes of every description that can be seen on Soviet ships, especially on the newest and most important types (helicopter and guided-missile cruisers, for example) is an indication of the attention the Soviet Navy gives to electronic warfare. NATO code names for the antenna arrays for intercept or for jamming radars include: Side Globe, Top Hat A and B, Bell Clout, Bell Shroud, Bell Squat, Cage Pot, Watch Dog, and Rum Tub.

Many of the more modern ships are equipped with twin-tubed chaff rocket launchers (*Kiev, Moskva*, Kresta-I and -II, Kara, *Berezina*) or 16-tubed fixed chaff rocket launchers (Mod. Kashin, Krivak-I and -II, Tarantul, Pauk Nanuchka, Matka, etc).

IFF (Identification Friend or Foe) is taken care of by High Pole A and B transponders and by Square Head or other interrogators. The newer Salt Pot A transponders are slowly replacing High Pole A & B. The modern radars have integral IFF interrogation. TACAN systems included the large Top Knot spherical array on the Kiev-class carriers, and the various forms of the paired cylindrical Round House array on the Kirov, Udaloy, and other classes.

G. COMMUNICATIONS

All Soviet warships are equipped to transmit and receive MF through VHF communications, while submarines have a VLF capability (using towed buoy antennas), and UHF equipment is coming into wider use in surface ships. VHF antennas in use include: Cage Bare, Cage Cone, Cage Stalk, and the older Straight Key. Major warships usually have a Pop Art VHF antenna. Long-range HF communications are handled via the "Vee" series antennas Vee Cone, Vee Tube, or Vee Bars. Fixed arrangements 9-m long with two identical conical components mounted at 70-deg. to each other in the horizontal plane are termed Vee Cone. Vee Tube uses tubular, 8.6-m-long components at 90-deg. separation, and Vee Bars is the nickname for an open-framework arrangement on the Kiev class. Submarines rely on VLF, and an ELF station is building.

H. SATELLITES

The Soviets use an ocean surveillance satellite system whose data is transmitted either to ground stations or directly to ships equipped with the SS-N-12 and SS-N-19 cruise-missile systems. The receiving antenna is mounted in a large cylindrical radome termed Punch Bowl. The cruisers Zhdanov and Admiral Senyavin have two 4.5-m-diameter Big Ball radomes, associated with the Molniya and Raduga satellite communications systems, although many other ships can apparently receive transmissions from communications and navigational satellites.

V/STOL CARRIERS

Note: An over-300-meter-long, nuclear-powered, Western-style, conventional aircraft carrier of about 65,000 tons full-load displacement and equipped with an angled deck and a ski-jump bow is reported to have been launched at Black Sea (formerly: Nosenko) shipyard, Nikolayev late in 1985. Completion about 1989 is expected. A second unit has been laid down.

A flight-deck prototype for the ship has been built at the Crimean naval air base at Saki; some 320-m in length, it incorporates arresting wires, but catapults are not yet installed. Also present are two ski-jump takeoff ramps. Aircraft employed in trials at Saki include the Su-27 Flanker, Su-25 Frogfoot, and the MiG-29 Fulcrum. The actual carrier air group will probably include fixed-wing fighters, V/STOL fighter-bombers, and helicopters. The ship's defensive armament will probably include SA-N-9 vertical-launch SAMs and gatling AA guns.

♦ 3 (+1) Kiev class

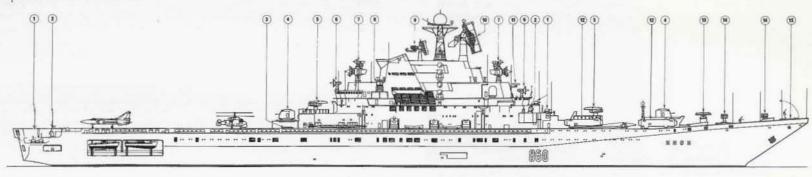
| | Bldr | Laid down | L | In serv. |
|--------------|-------------------------|-----------|----------|----------|
| Kiev | Black Sea SY, Nikolayev | 9-70 | 31-12-72 | 5-75 |
| MINSK | Black Sea SY, Nikolayev | 12-72 | 5-75 | 2-78 |
| Novorossiysk | Black Sea SY, Nikolayev | 10-75 | 12-78 | 9-82 |
| RAKH | Black Sea SV Nikolayey | 1978 | 3-82 | 1986 |

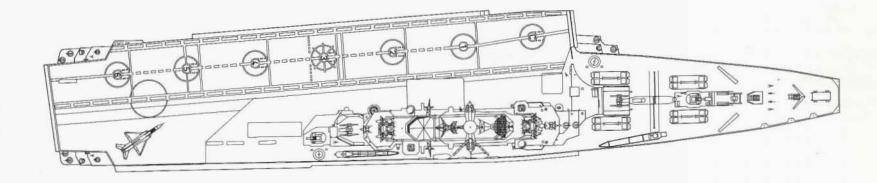
D: 36,000 tons (43,000 fl) S: 32 kts

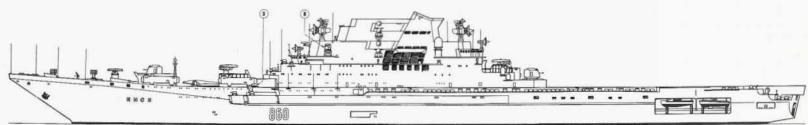
Dim: 273.0 (249.5 wl) \times 47.2 (32.70 wl) \times 10.0

A: 8/SS-N-12 (II \times 4, 16 missiles) -2/SA-N-3 systems (II \times 2; 72 Goblet missiles) -2/SA-N-4 systems (II \times 2, 40 missiles — not in *Novorossiysk*, Baku)-4/76.2-mm DP (II \times 2) -8/30-mm gatling AA (VI \times 8) — 10/533-mm TT (V \times 2) -1/SUW-N-1 ASW RL (II \times 1) -2 RBU-6000 ASW RL (XII \times 2) -14-17/Hormone-A or Helix-A and Hormone-B helicopters -12-13/Forger A/B VTOL aircraft — *Novorossiysk*: 12/SA-N-9 SAM silos (96 missiles, not yet fitted)

V/STOL CARRIERS (continued)







Kiev 1. 30-mm gatling guns 2. Bass Tilt radar 3. SA-N-4 launcher 4. twin 76.2-mm DP mount 5. SA-N-3 launcher 6. Owl Screech radar 7. Head Lights radar 8. Pop Group radar 9. Top Steer radar 10. Top Sail radar 11. Don-2 radar 12. twin launchers for SS-N-12 system 13. SUW-N-1 launcher 14. RBU-6000 15. Trap Door radar

Note: Plan view shows flight configuration as completed in 1976; the angled-deck centerline stripe is now straight at its forward end, and the after two ammunition elevators have been combined into a single 12.5-m-long lift.



Kiev 16 Flot., French Navy, 5-85



Kiev R. Neth. Navy, 5-85



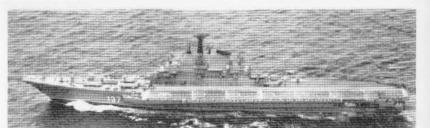
Novorossiysk — showing wind-baffle arrangement to port of SS-N-12 installation French Navy, 5-83

V/STOL CARRIERS (continued)



Novorossiysk—showing the "black hole" exhaust spray deflector to port of the VDS door in the transom stern and the current arrangement of the flight-deck markings

French Navy, 5-83



Novorossiysk on her first deployment, 5-83. Note absence of SA-N-4 launchers and Side Globe antennas JMSDF, 1983



Kiev

R. Neth. Navy, 1985



Minsk

JMSDF, 1984



Novorossiysk

French Navy, 1983



Minsk after a 1981-82 refit—with the forward port sponson and flight-deck forward edge rearranged to improve air flow, blast shields added abaft SS-N-12 launchers

JMSDF, 1982

V/STOL CARRIERS (continued)

Electron Equipt: Radar: 1/Don Kay, 2/Don-2, 1/Top Sail, 1/Top Steer, 2/Head
Lights, 2/Pop Group. 2/Owl Screech, 4/Bass Tilt,
1/Trap Door (Novorossiysk: 3 Palm Frond vice Don
Kay, Don-2, no Pop Group, plus 2/Strut Pair)
Sonar: 1/low freq., hull-mounted; 1/med.-freq., towed VDS
EW: 8/Side Globe (not in Novorossiysk), 4/Top Hat A, 4/Top

Hat B, 4/Rum Tub, 2/Bell Clout—2/chaff RL (II × 2) M: 4 sets GT; 4 props; 200,000 hp Boilers: 8 Fuel: 7,000 tons

Range: 4,000/31; 13,500/18 Man: 1,200 tot.

Remarks: General: The Soviet Navy's designation for the Kiev class is Bolshoy Protolovadochnyy Kreyser (Large Antisubmarine Cruiser), although the Minsk was referred to as a Taktycheskoye Avionosnyy Kreyser (Tactical Aircraft-Carrying Cruiser) on her initial deployment. The ships have capabilities for ASW, sea-control, and sea-denial missions. The hull is unusual in having a counter stern that sweeps up several meters above the waterline before meeting the transom. The variable-depth sonar is deployed through doors on the centerline of the transom stern; the black-painted, ribbed recess to port of the VDS housing is a spray deflector to prevent spray from entering air intakes of Forger V/STOL aircraft while landing. For their size and function, the ships carry very small crews. The displacement is still uncertain, with U.S. sources quoting a draft of 8.3 m and a full-load of only 37,100 tons.

Minsk was refitted in 1981-82 at Vladivostok with an extended port forward sponson supporting the 30-mm gatling guns, a rounded leading edge to the flight deck, and a number of blast deflector or wind deflection plates erected on the forecastle abaft the SS-N-12 launchers; all these changes should improve air flow over the flight deck (which has been given an additional V/STOL landing spot) and should prevent sea damage to the guns. The third unit, Novorossiysk, has the deflectors and rounded deck edge, but retains the original sponson configuration. Kiev entered the Black Sea in 1982 to undergo her first major overhaul and emerged in 1985 with fewer alterations than expected, although air-flow baffles had been added. These ships are hampered by their low freeboard and have a noticeable squat at the stern when moving at higher speeds. There is an enormous bow bulge to accommodate the hull-mounted sonar

transducer. Novorossiysk lacks the SA-N-4 SAM system, instead having blanking plates over what will eventually be SA-N-9 vertical-launch installations abaft the island and forward to port; there are empty director platforms on the superstructure. The ship showed a number of electronics array differences from the first two, including the elimination of the 8-radome Side Globe array and the substitution of six new t.v./electro-optical devices ("Tin Man") for the Tee Plinth devices formerely used.

The ships have a retractable, spherical Bob Tail radio sextant antenna abaft the

stack; all have microwave aircraft landing systems.

Aviation installations: The flight deck portion of the upper deck is angled about 4.5° to port of the centerline axis of the ship and is about 185 m long by 20 m wide. To protect against the hot exhaust of the Forger vertical take-off and landing aircraft, it is partially covered with a mosaic of refractory tiles. There are two elevators to the hangar deck: one $(19.20~\mathrm{m}\times10.35~\mathrm{m})$ beside the stack; the other $(18.50~\mathrm{m}\times4.70~\mathrm{m})$ abaft the island. Four small ammunition elevators are connected by an on-deck rail system. Both Kiev and Novorossiysh have operated the new Helix A (Ka-27) ASW helicopter.

Armament: The SS-N-12 missiles are launched from four twin, non-trainable elevating tubes. In order to use the full over-the-horizon range of the missiles, a forward-located, target-designation observer platform has to be used. On the *Kiev*, that requirement is met by the Hormone-B, which carries a long-range radar giving a range of 100 nautical miles with the helicopter at an altitude of 4,000 feet. The ship can also

use target information relayed by satellite, using the two receiving antennas in the Punch Bowl radomes. There are eight missiles in the launch tubes, plus sixteen reloads raised from a below-decks magazine by a centerline elevator between the launch-tube-sets and aligned with the launchers for loading by a traversing system.

Baku, whose fitting-out period has been more protracted than the others, is reported to incorporate a number of configurational changes, including later radar systems, additional numbers of SS-N-12 launchers, and SA-N-9 vertical-launch SAMs.

HELICOPTER CRUISERS

2 Moskva class

Moskva

| | Bldr | Laid down | L | In serv. |
|-----------|-------------------------|-----------|------|----------|
| Moskva | Black Sea SY, Nikolayev | 1962 | 1964 | 7-67 |
| LENINGRAD | Black Sea SY, Nikolayev | 1964 | 1966 | 1968 |



French Navy, 1979



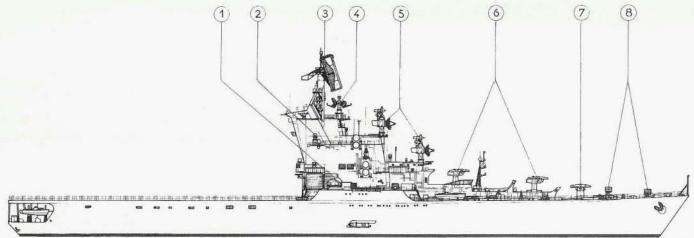
Leningrad

VP-26, U.S. Navy, 5-84



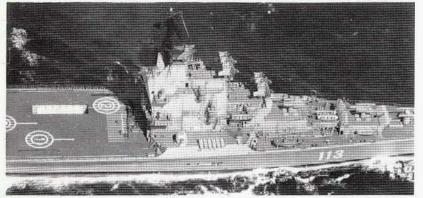
Leningrad

HELICOPTER CRUISERS (continued)



Moskva 1. Twin 57-mm DP mount 2. Muff Cob radar/t.v. gun director antenna 5. Head Lights missile fire-control radars 6. SA-N-3 launchers launchers

3. Top Sail 3-D radar antenna 4. Head Net-C air-search radar 7. SUW-N-1 ASW rocket launcher 8. RBU-6000 ASW rocket



Leningrad - amidships detail

U.S. Navy, 6-84

- D: 14,500 tons (17,000 fl) S: 30 kts Dim: 189.0 × 34.1 (flight deck), 26.0 $(wl) \times 7.6$
- 2/SA-N-3 systems (II × 2; 44 Goblet missiles) 4/57-mm DP (II × 2) 1/SUW-N-1 ASW RL — 2/RBU 6000 ASW RL — 14 Hormone-A/B/C helicopters

Electron Equipt: Radar: 3/Don-2, 1/Top Sail, 1/Head Net-C, 2/Head Lights, 2/Muff Cob

EW: 8/Side Globe, 2/Top Hat, 8/Misc. Bell-series, 2/chaff $RL(II \times 2)$

Sonar: 1/LF hull-mounted, 1/MF VDS

M: 2 sets GT; 2 props; 100,000 hp Boilers: 4 Range: 4,500/29; 14,000/12 Man: 850 tot.

Remarks: Soviet type designation: Protivolodochnyy Kreyser (Antisubmarine cruiser). Flight deck 86 × 34 m. Hangar beneath flight deck, with small hangar between stack uptakes in superstructure. Two elevators to hangar aft, plus small hangar for two helicopters at forward end of flight deck, between the stack uptakes. The Moskva was modified for a time to permit the testing of Yak-38 Forger-A aircraft, which were to go aboard the Kiev carriers. Both ships had their ten 533-mm ASW TT removed and the side embrasures plate in during the mid-1970s. Sonar dome is retractable within hull.

Fin stabilizers fitted. Have carried Haze-type mine countermeasures helicopters, but cannot hangar them. Hulls trim down about 1 m by the bow, and they are poor sea-boats.

NAVAL AVIATION

Naval aviation, which dates from 1919, is an integral part of the Soviet Navy in which approximately 70,000 men are involved, but its organization and ranks are the same as those of the air forces. Aircraft are part of the four naval fleets (Northern, Baltic, Black Sea, and Pacific) and are under the direct control of the commanders of those fleets. The air arm has some 1,635 aircraft, including:

390 strike bombers: 100 Backfire-B, -C, 250 Badger-C, -G, 40 Blinder-A

135 fighters/fighter-bombers: 60 Forger-A, 75 Fitter-C

Tactical Support:

72 tankers: Badger-A

170 reconnaissance & electronic warfare: 45 Bear-D, 45 Badger-D, -E, -F, -H, -K, J. . . . Blinder, . . . Hormone-B

465 Antisubmarine Warfare:

205 fixed wing: 60 Bear-F, 50 May, 95 Mail

250 helicopters: 130 Hormone-A, 90 Haze-A, 30 Helix-A

400 miscellaneous training, transports, utility helicopters, etc.

Operational aircraft are divided into the four fleets as follows:

| | Northern | Baltic | Black Sea | Pacific | Total |
|---------------------------------------|----------|--------|-----------|---------|-------|
| Reconnaissance and electronic warfare | 55 | 10 | 15 | 60 | 140 |
| Bombers | 70 | 90 | 100 | 130 | 390 |
| Attack fighters | 15 | 40 | 0 | 80 | 135 |
| Refueling | 18 | 20 | 14 | 20 | 72 |
| ASW (fixed wing) | 80 | 20 | 25 | 80 | 205 |
| Helicopters (all types) | 105 | 50 | 100 | 115 | 370 |

Note: The Soviet Navy also employs the An-22 Cub transport in a number of variants for intelligence collection, ECM, transport, and research-and-development duties. Il-18 Coots are used as transports, ECM, and ELINT aircraft, and there are a number of utility aircraft and helicopters in service.

| | COMBAT AIRCRAFT | | | | | | | | | | |
|---|--|----------------------------|----------------|---------------------------------------|--------|--|---|---|--|---|--|
| NATO code name and builder | Mission | Year put in serv. | Max. weight | Wing-span | Length | Engine | Speed max cruising | Operational radius ¹ | Armament | Fitted with | Remarks |
| • FIXED-WING | | | | | | | | | | | |
| Backfire-B, -C TU-22M (Tupolev) | Reconnaissance and ship attack | 1975 | 121.5 t | 34.45 m (26.2 m fully swept) | 40.2 m | 2 Kuznetsov NK 144 turbojets of 24,000-kg thrust each | Mach. 2.2 at 50,000 ft; Mach 1.3 at 3,000 ft | Supersonic: 3,485/2.250 km with/without refueling Subsonic: 6,300/5,320 km with/without refueling | 2/23-mm cannon, 12,000 kg of bombs (nuclear or conven- tional), on ex- ternal racks, 1-2 AS 4, AS 6, or AS-9, mines | Down Beat navigation and bombing radar; 1 optical bomb sight; 1 Fan Tail tail radar; IFF. | The naval version of Backfire has ECM and ECCM equipment. Has variable-geometry, swept wing Backfire-C has a different air intake configuration Naval units carry no refueling probes. |
| Blinder-A, -C, -D TU-22 (Tupolev) | A: gravity bomber C: photo reconn D: trainer | 1963 | 85 t | 28.8 m | 41.7 m | 2 Kolesov VD-7 turbojets, 20,000-kg thrust each (14,000-kg thrust without using after burners) | Mach. 1.5 at 36,000 ft | Supersonic speeds: 1,000 km without refueling: 1,600 km with refueling Subsonic speeds: 1,500 km without refueling, 2,000 km with refueling | 1/23-mm cannon, 5,000 kg bombs | 1 Down Beat navigation radar; 1 Bee Hind tail radar, IFF; 7 cameras | The "C" version is especially configured for maritime reconnaissance. The "D" version is a trainer. Not a very successful design; few in service. |

COMBAT AIRCRAFT (continued)

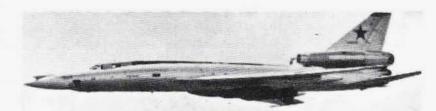
COMBAT AIRCRAFT (cont.)

| NATO code name and builder | Mission | Year put in serv. | Max. weight | Wing-span | Length | Engine | Speed max cruising | Operational radius ¹ | Armament | Fitted with | Remarks |
|--|--|----------------------------|---------------------------|---------------------------|------------------------------|--|---|--|--|---|--|
| Bear-C, -D TU-95 Bear-F TU-142 (Tupolev) | Reconnaissance and electronic warfare | 1955 | 160 t (F: 171 t) | 48.5 m (F: 51.1) | 47.5 m (F: 49.5) | 4 Kuznetsov NK-12MV tur- boprops of 15,000 hp each; 4 bladed, contrarotating props | 500 kts at 25,000 ft 440 kts at sea level | 8,000 km without refueling; 9,500 km with refueling | Up to 7/23-mm cannon plus 8,000-kg torpedoes, bombs in Bear-F | Big Bulge A (F: Wet Eye), tail radar, well-equipped with electronic countermeasures. | Bear-F (Tu-142), the ASW version, has sonobuoys, depth charges, and torpedoes; the newest now have a MAD boos |
| Badger-A TU-16 (Tupolev) | Aerial refueling | 1954 | 77 t | 34.5 m | 36.5 m | 2 AM-3 M turbojets, 9,550- kg thrust each | 540 kts at 22,000 ft 445 kts at sea level | 4,800 km | 7/23-mm cannon, up to 3,800 kg bombs | 1 navigation and bombing radar; 1 tail radar; some electronic warfare equipment. | Wing-tip hose dispensers for refueling. Retains a secondary bombing capability |
| Badger-C TU-16 (Tupolev) | Ship attack | 1960 | 77 t | 34.5 m | 36.5 m | 2 AM-3 M turbojets, 9,550- kg thrust each | 540 kts at 22,000 ft 445 kts at sen level | 3,200 km without refueling | 6/23-mm cannon, 1 AS-2 Kipper or 2 AS-6 Kingfish | 1 Puff Ball Navigation and bombing radar; 1 Doppler radar; 1 Bee Hind tail radar. | |
| Badger-G TU-16 (Tupolev) | Ship attack | 1965 | 77 t | 34.5 m | 36.5 m | 2 AM-3 M turbojets, 9,550- kg thrust each | 540 kts at 22,000 ft 445 kts at sea level | 3,200 km without refueling | 8/23-mm cannon, 2 AS-5 Kelt or 2 AS-6 Kingfish | Short Horn navigation and bombing radar; 1 Doppler radar; 1 Bee Hind tail radar. | |
| Badger- D, -E, -F, -J TU-16 (Tupolev) | Reconnaissance and electronic warfare | | 77 t | 34.5 m | 36.5 m | 2 AM-3 M turbojets, 9,550- kg thrust each | 540 kts at 22,000 ft 445 kts at sea level | 3,200 km without refueling | 6/7/23-mm cannon | Puff Ball navigation and bombing radar; electronic war- fare equipment; 1 tail radar. | Different versions for ELINT, photo reconnaissance, etc. |
| Forger-A/B YAK-38 (Yakolev) | A: Ship attack, day interceptor B: 2-seat trainer | 1976 | 9.9 t | 7 m | 15 m (B: 17.7 m) | 1/7,650-kg thrust main engine; 2/3,600-kg lift engines | Mach 1.1 at 36,000 ft | 125 nautical miles low-low-low; 240 n.m. low-high-low | 16 or 32 rockets, 2/23-mm cannon, 2/AS-7 or AS-10 missiles, or 1,000-kg bombs | Passive warning system; inertial navigation. No radar. | Forger-B, the two-seat training version, is also carried aboard ship. A-version can also carry AA-8 air-to-air missiles. Originally vertical takeoff only now V/STOL. |
| Fitter-C, -D SU-20 (Sukhoi) | Ship attack | 1976 | 17 t | 14 m (10.5 m swept) | 17.6 m | 1/Lyulka, AL-21F, 11,000-kg thrust turbojet | Mach 1.8 at 50,000 ft | 220 nautical miles low-low-low; 435 n.m. high-low-high | 32/57-mm rockets, 2/30-mm cannon, 3,500 kg bombs, nuclear or con- ventional | Ranging radar; tail warning radar; laser range finder; auto- matic control | Used by Naval Air Force in Balti area. Can also carry AA-2 Atol or AA-8 Aphid air-air or AS-7 or AS-10 air-ground-missiles |
| May IL-38 (Ilyushin) | ASW | 1969 | 68 t | 37.4 m | 36.9 m | 4 turboprops, 5,200 hp each | 380 kts at 30,000 ft 315 kts at sea level | 3,000 km, endurance: 12 hours | 7,000 kg of bombs, depth charges, torpedoes | Radar, MAD², sonobuoys | II-18 Coot ELINT and ECM aircraft use the same basic air- frame. 12-hour endurance. |
| Mail BE-12 (Beriev) | ASW | 1967 | 30 t | 29.7 m | 30.2 m | 2 AL-20D turboprops, 4,190 hp each | 310 kts at 30,000 ft 240 kts at sea level | 1,300 km | Bombs, charges, mines | Radar, MAD ² , sonobuoys | Amphibian, but used primarily from land |
| ♦ HELICOPTERS | | | | | | | | | | | |
| Haze-A, -B MI 14 (Mil) | A: ASW, B: Mine countermeasures | 1976 | 12 t | rotor diam. 21.3 m | 24 m (18.2 fu- selage) | 2 Isotov TV 3 117A turboshafts, 2,200 hp each | 140 kts 122 kts | 305 km, endurance: 2.5 hours | Depth bombs or torpedoes: 2,000 kg total | Dipping sonar, towed MAD ² pod | Land-based; rotors do not fold. Crew of four. B-version tows hydrofoil sled. |
| Hormone-A, -B, -C KA 25 (Kamov) | A: ASW B: Targeting C: Utility | 1967 | 7.3 t | rotor diam. 16 m | 10 m | 2 GTD 3 F turboshafts, 905 hp each | 120 kts 105 kts | 250 km, endurance: 1.5 to 2 hours | Depth charges or torpedoes: 1,000 kg total | Sonobuoys and dipping sonar | Carried on board Kieu, Moskva, Kara, and Kresta classes. The B version has a Video Data Link system. C version in var- ious utility configurations, including reconn. |
| Helix-A, -B, -D KA-27 (Kamov) | A: ASW B: Troop-carrying D: Search-and-res- cue | 1980 | 12.6 t | rotor diam. 15.90 m | 11.30 m (12.25 folded) | 2 Glushevkov TV3 117V turboshafts; 4,450 hp | 140 kts 124 kts (with 5,000-kg paylond) | 400 km, endurance: 2 to 2.5 hours | Depth charges or 2 torpedoes | Sonobuoys and dipping sonar, possible MAD | Civil version, Ka-32 (Helix-C) has lifted 5,000 kg. Helix-B for use on <i>Ivan Rogov</i> . |
| Hip-C MI-8 (Mil) | Transport | 1967 | 12 t | rotor diam. 21.0 m | 18.3 m | 2 Isetov TV-2-117A turboshafts, 1,500 hp each | 125 kts 100 kts | 220 km | 12 troops, or 4,000 kg cargo | | Land-based. Some used for aerial minesweeping. |

(1) The operational radius is roughly 60% of the radius given by one-half of the range (2) MAD = Magnetic Detection



Backfire-B (Tu-22M) naval bomber



COMBAT AIRCRAFT (continued)



Bear-D (Tu-95) - reconnaissance

U.S. Navy, 7-83



Bear-F (Tu-142) long-range ASW aircraft with new MAD boom atop the stabilizer $$\rm U.S.\ Navy,\,9\text{-}83$$



Badger-A (Tu-16) - tanker, with wingtip drogue system

1972



Badger-E (Tu-16) --- ELINT

U.S. Navy, 1985



Forger-A (Yak-38), showing flow fences added atop the fuselage



Badger-G (Tu-16) - missile carrier



Forger-B (Yak-38) two-seat training VTOL aircraft

1001



May (II-38) - ASW aircraft

U.S. Navy, 1983



Coot-A (II-18) intelligence collector

1983



Mail (Be-12) - ASW amphibian - MAD boom protruding aft

U.S. Navy, 1984

COMBAT AIRCRAFT (continued)



Haze-A (Mi-14) land-based ASW helicopter

PH2 P. Soutar, U.S. Navy, 9-83



Hormone-A (Ka-25) ASW helicopter

PH2 P. Soutar, U.S. Navy, 9-83



Hormone-B (Ka-25) targeting helicopter

U.S. Navy, 1-84



Hip-C (Mi-8) utility helicopter

1981



Hormone-C utility helicopter in SAR configuration

French Navy, 1981



Helix-A (Ka-27) ASW helicopter

U.S. Navy, 1-84



Helix-D (Ka-27) search-and-rescue helicopter

French Navy

SUBMARINES

Note: Nuclear-powered submarines are built or modernized in the Severodvinsk (formerly, Molotovsk) Naval Shipyard on the White Sea, near Arkhangelsk; at Komsomolsk-on-Amur in the Far East; in the Gorkiy Shipyard on the Volga; and at the United Admiralty Shipyard in Leningrad (comprising the former Sudomekh and Admiralty Shipyards).

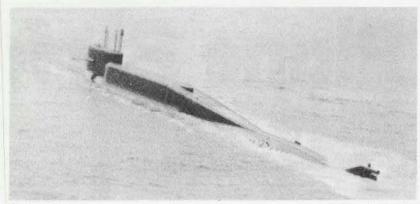
Most modern Soviet submarines have an anechoic hull coating that absorbs the echoes of sonars and thus reduces the intensity of reflected echoes. Reports of exotic propulsion systems, such as magnetohydrodynamic drive, electromagnetic drive, or the use of compliant coatings to improve boundary layer flow, although discussed in the popular press, apparently have yet to find use or, an actual operational Soviet submarine class.

BALLISTIC-MISSILE SUBMARINES (NUCLEAR-POWERED)

(Soviet Type: PLARB—Podvodnaya Lodka Atomnaya Raketnaya Ballisticheskaya = Nuclear-powered Ballistic Missile Submarine.)

• 1 (+3 +) Delta-IV class

Bldr: Severodvinsk SY



Delta-IV class

R. Nor. A.F., 1985

D: 10,750 tons (surf.)/13,550 tons (sub.) **S:** 24 kts (sub.)

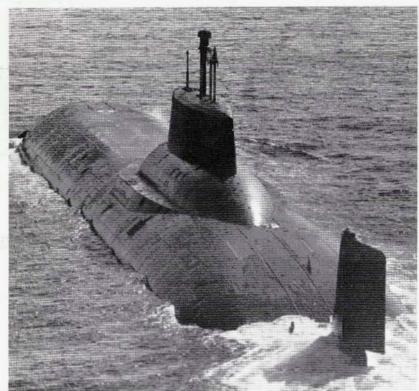
Dim: $164.0 \times 12.0 \times 8.7$

A: 16/SS-NX-23 ballistic missiles—6/533 or 650-mm TT (bow)
Electron Equipt: Radar: 1/Snoop Tray—Sonar: LF passive/active
M: 2 nuclear reactors, steam turbines; 2/7-bladed props; 50,000 hp
Man: . . .

Remarks: First unit launched 1-84, operational by 1985; three others in various stages of construction. A further elongation of the early-1960s Yankee design and apparently externally similar to Delta-III. Believed capable of operating under the ice-pack. Distinguishable from Delta-III by possible towed array tube atop rudder and camera housing at aft end of turtledeck.

4 (+ . . .) Typhoon class
 Bldr: Severodvinsk SY (L: 9-80, 9-82, 12-83, 1984)

D: 25,000 tons (sub.) S: 25 kts (sub.) Dim: $170.0 \times 25.0 \times 13.0$ (approx.) A: 20/SS-N-20 ballistic missiles—. . . /533-mm or 650-mm (torpedoes, SS-N-15/16) TT



Typhoon class

M.O.D., U.K., 1984



Typhoon class—pyramidal structures abaft probable communications-buoy hatches abaft sail probably house t.v. cameras M.O.D., U.K., 1984

Electron Equipt: Radar: 1/Snoop Pair — Sonar: LF active/passive M: 2330-360 MW nuclear reactors; 2/7-bladed props, . . . hp Man: 150 tot.

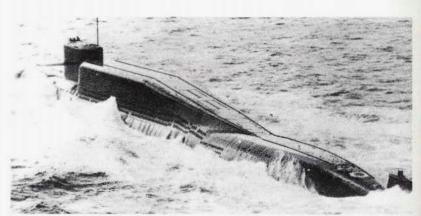
Remarks: World's largest submarines. Eight or nine total units expected. Evidently intended to operate beneath the Arctic ice pack, breaking through to launch. The first Typhoon launched two missiles within 15 sec. in 10-82. Design incorporates two parallel pressure hulls within the outer hull, with the massive sail being an additional pressure vessel. Forward location of the missile tubes is unique. The first began trials 6-81, the second in 6-83. Propulsion plant probably generates over 100,000 hp.

◆ 14 Delta-III class Bldr: Severodvinsk SY



Delta-III class

1982



Delta-III - note communications-buoy hatches on sloped portion of missile turtledeck



Delta-III

D: 10,500/13,250 tons **S:** 24 kts (sub.) **Dim:** $155.0 \times 12.0 \times 8.7$ **A:** 16/SS-N-18-6/533-mm TT fwd. (18 torpedoes) **Man:** 120 tot.

Electron Equipt: Radar: 1/Snoop Tray

Sonar: 1/LF active, passive array

M: 2 nuclear reactors, steam turbines; 2/5-bladed props; 50,000 hp

Remarks: Two went into service in 1975, four in 1976, two in 1977, two in 1978, and three in 1979-81; the 13th was launched 3-4-81, the 14th in 12-81. Has higher "turtle-deck" than Delta-II, to accommodate the longer SS-N-18 tubes. Have towed VLF communications buoys. One is named 60 Let Velikyo Oktyabr.

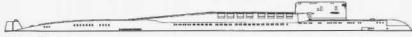
BALLISTIC-MISSILE SUBMARINES (continued)

• 4 Delta-II class

Bldr: Severodvinsk (In serv. 1974-75)



Delta-II



Delta-II

D: 10,000/12,750 tons
S: 24 kts (sub.)
Dim: 155.0 × 12.0 × 8.6
A: 16/SS-N-8—6/533-mm TT fwd. (18 torpedoes)
Man: 120 tot.
Electron Equipt: Radar: 1/Snoop Tray—Sonar: LF active, passive array
M: 2 nuclear reactors, steam turbines; 2/5-bladed props; 50,000 hp

Remarks: Lengthened version of Delta-I, so as to carry four more SS-N-8.

♦ 18 Delta-I class Blo

Bldrs: Severodvinsk and Komsomolsk, (In serv. 1973-76)



Delta-I class - note stepped casing abaft missile tube area

U.S. Navy, 1979



Delta-I class



Delta-I

D: 9,000/11,750 tons S: 25 kts Dim: 140.0 × 12.0 × 8.7

A: 12/SS-N-8-6/533-mm TT fwd. (18 torpedoes)

Electron Equipt: Radar: 1 Snoop Tray

Sonar: 1/LF active, passive arrays

M: 2 nuclear reactors, steam turbines; 2/5-bladed props; 50,000 hp

Man: 120 tot.

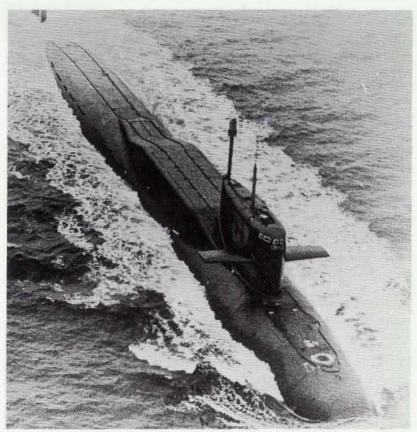
Remarks: One entered service in 1972, four in 1973, six in 1974, two in 1975, two in 1976, and three in 1977. Distinguished from later, longer Delta-II and -III by stepped turtleneck abaft sail.

1 Yankee-II class

Bldr: Severodvinsk SY (In serv. 1978?)



Yankee-II



Yankee-II — distinguishable from Delta-I by sloping forward edge to the missile-tube casing hump 1982

 21 Yankee-I class (In serv. 1967-74) Bldrs: Severodvinsk SY and Komsomolsk SY



Yankee-l



Yankee-I — with angled forward edge to sail, ESM, D/F, and comms. masts extended, bare metal sonar window U.S. Navy



Yankee class - with painted sonar window, straight forward edge to sail

1982

D: 7,900/9,600 tons S: 27 kts Dim: 130.0 × 12.0 × 8.8

A: Yankee-I: 16/SS-N-6-6/533-mm TT (18 torpedoes) Yankee-II: 12/SS-N-17-6/533-mm TT (18 torpedoes)

Electron Equipt: Radar: 1/Snoop Tray Sonar: 1/LF active, passive arrays

M: 2 nuclear reactors, steam turbines; 2/5-bladed props; 50,000 hp

Man: 120 tot.

Remarks: In one unit, nicknamed "Yankee-II," SS-N-6 has been replaced by SS-N-17 with twelve tubes. A total of 34 were completed: two in 1967, four in 1968, six in 1969,

BALLISTIC-MISSILE SUBMARINES (continued)

eight in 1970, six in 1971, five in 1972, two in 1973, and one in 1974. To date, twelve have had their missile tubes deactivated, in compliance with the U.S.-Soviet SALT agreements; these "de-fanged" Yankees are listed under attack submarines, except for one which has been converted to carry cruise missiles.

• 1 Hotel-III class Bld

Bldr: Severodvinsk (In serv. 1965)

D: 5,500/6,400 tons S: 20/25 kts Dim: 130.0 × 9.0 × 7.0

A: 2/SS-N-8-6/533-mm TT-2/400-mm TT Electron Equipt: Radar: 1/Snoop Tray

Sonar: 1/MF active, passive arrays

M: 2 nuclear reactors, steam turbines; 2/6-bladed props; 30,000 hp Man: 80 tot.

Remarks: Used as trial ship for SS-N-8 missiles. Lengthened during conversion.

Note: All Hotel-II-class nuclear-powered ballistic-missile submarines are believed to have had their SS-N-5 ballistic-missile systems disabled in compliance with SALT requirements. One has been converted as a communications unit, and the others may reappear as attack submarines, although they are quite obsolescent.

BALLISTIC-MISSILE SUBMARINES (DIESEL-POWERED)

(Soviet Type: PLRB = Podvodnaya Lodka Raketnaya Ballisticheskaya = Ballistic-Missile Submarine)

1 Golf-V class

Remarks: One Golf-II-class submarine has had the original three missile tubes replaced by a single tube for a new missile (possibly SS-N-20) for trials purposes. Other details as for Golf-II class. The single Golf-IV trials conversion for the SS-N-6 missile (6 tubes) has apparently been scrapped.

• 1 Golf-III class

Bldr: Severodvinsk SY (In serv. 1958-61)



Golf-III

U.S. Navy

D: 2,900/3,300 tons S: 12 kts (sub.) Dim: 110.0 × 8.5 × 6.6

A: 6/SS-N-8-10/533-mm TT (6 fwd, 4 aft)

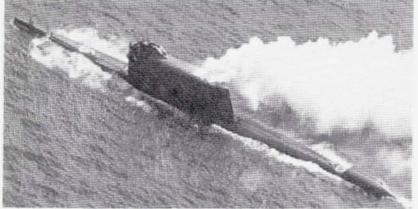
Electron Equipt: Radar: 1/Snoop Tray — Sonar: 1/med. freq., passive array

M: 3 diesels; 2,000 hp each, electric drive; 3 props; 5,300 hp (sub.) Endurance: 70 days Range: 9,000/5 Man: 87 tot.

REMARKS: Converted for trials purposes, early 1970s.

♦ 13 Golf-II class

Bldr: Severodvinsk (In serv. 1958-61)



Golf-II — with VLF comms.-buoy housing near stern (smoke from sail evidently part of a damage-control/salvage exercise)

Ships of the World, 11-84



Golf-II class - communications-buoy housing abaft sail

1976

D: 2,300/2,700 tons S: 12 kts (sub.) Dim: 100.0 × 8.5 × 6.6

A: 3/SS-N-5-10/533-mm TT (6 fwd, 4 aft)

M: Diesel-electric drive, 3/2,000-hp diesels; 3 props; 5,300 hp (sub.)

Endurance: 70 days Range: 9,000/5 Man: 80 tot.

Remarks: These submarines continue to be active, and a number of them have been stationed in the Baltic. The range of the SS-N-5 has been extended from the original 700 nautical miles to 900. All Golf-IIs are conversions from Golf-I. The few remaining unconverted Golf-I-class submarines have been scrapped or converted to other functions.

CRUISE-MISSILE ATTACK SUBMARINES (NUCLEAR-POWERED)

(Soviet Type: $PLARK-Podvodnaya\ Lodka\ Atomnaya\ Reketnaya\ Krylataya=Nuclear-Powered\ Cruise-Missile\ Submarine)$

◆ 2 (+ . . .) Oscar class

Bldr: Severodvinsk SY (In serv. 1982-. . .)



Second Oscar-class unit - note missile-tube doors abreast sail R. Nor. A.F., 1984



Second Oscar-class unit — note buoy housing abaft sail

R. Nor. A.F., 1984



Oscar class

CRUISE-MISSILE ATTACK SUBMARINES (continued)



Second Oscar-class unit—snow on deck outlines bow weapons-loading hatch and missile-tube hatch doors

R. Nor. A.F., 1984

D: 11,500/14,500 tons S: 35 kts (sub.) Dim: $150.0 \times 18.0 \times 11.0$ A: 24/SS-N-19 SSM -8/533- or 650-mm TT fwd (24 SS-N-15/16; torpedoes) Electron Equipt: Radar: . . . — Sonar: 1/LF active, 1/MF active, passive arrays M: 2 nuclear reactors, steam turbines; 2/7-bladed props; 90,000 hp Man: . . .

Remarks: The first was launched in 4-80, the second in 12-82; additional units are expected. The missile tubes are mounted in two rows of twelve, abreast the sail, fixed in elevation at about 40°, with doors opening through the outer hull, as on the Papa and Charlie-I and -II classes. The missiles are launched while the submarine is submerged, presumably using targeting data from a forward observer or from satellite targeting. Six outer hatch doors each cover two tubes. The tubes provide a 3.5-m stand-off between the outer hull and the pressure hull. A towed hydrophone array is dispensed from a tube at the top of the rudder on the second unit.

♦ 1 Papa class Bldr: Gorkiy SY (In serv. 1970)

D: 6,700/8,000 tons S: 39 kts Dim: $109.0 \times 12.2 \times 9.5$ A: 10-SS-N-9-6/533-mm TT fwd

M: 2 nuclear reactors, steam turbines; 2/5-bladed props; 60-75,000 hp Man: 85 tot.



Papa class - note 4 TT, reload hatch, missile-tube covers visible

M.O.D., U.K., 1981

Remarks: May have been a concept prototype. Launched 1968. Missiles launched from submerged condition, apparently against acoustically located targets. Has had two lengthy overhauls and very little active service. May have a titanium pressure hull.

• 6 Charlie-II class I

Bldr: Gorkiy SY (In serv. 1973-1982)



Charlie-II class

U.S. Navy



Charlie-II class - note "collar" at base of sail

U.S. Navy, 1979

D: 4,500/5,400 tons **S:** 24 kts (sub.) **Dim:** $102.0 \times 10.0 \times 8.0$ **A:** 8/SS-N-9-6/533-mm TT fwd. (12 SS-N-15, torpedoes)

Electron Equipt: Radar: 1/Snoop Tray — EW: 1/Brick Spit, 1/Brick Pulp Sonar: 1/LF active, passive arrays

M: 1 nuclear reactor, steam turbines; 1/5-bladed prop; 15,000 hp Man: 110 tot.

Remarks: All in Northern Fleet. One in service in each of the years 1973, 1974, 1977, 1979, 1980/81, and 1982. The additional 8-m length over the Charlie-I comes between the missile tubes and the sail. Probably can also launch the SS-N-7. Have VLF comms buoy housing abaft the sail.

♦ 11 Charlie-I class

Bldr: Gorkiy SY (In serv. 1968-72)



Charlie-I class - note "collar" added at base of sail

CRUISE-MISSILE ATTACK SUBMARINES (continued)



Charlie-I class

D: 4,000/5,000 tons S: 24 kts (sub.) Dim: 94.0 × 10.0 × 8.0 A: 8/SS-N-7-6/533-mm TT fwd. (12 SS-N-15, torpedoes)

Electron Equipt: Radar: 1/Snoop Tray—EW: 1/Brick Spit, 1/Brick Pulp Sonar: 1/LF active, passive arrays

M: 1 nuclear reactor, steam turbines; 1/5-bladed prop; 15,000 hp Man: 100 tot.

Remarks: In service at the rate of about two a year between 1968 and 1973. "Collar" structures being added at the forward base of the sail, apparently to smooth water flow. Diving depth: 400 m normal/600 m max. One sank 6-83 in the Pacific; subsequently salvaged.

• 1 Yankee-class conversion

D: 13,650 tons (sub.) S: 23 kts (sub.) Dim: 153.0 × 12.0 × 9.0

A: 12/SS-N-24 SSM - 6/533-mm TT (fwd)

Electron Equipt: Radar: . . . - Sonar: .

M: 2 nuclear reactors, steam turbines; 2/5-bladed props; 45,000 hp

Remarks: Converted from a Yankee-I which had her SS-N-6 ballistic-missile system deleted in compliance with SALT. Relaunched 12-82, and apparently operational as trials submarine for the SS-NX-24 cruise-missile system by 1985.

• 28 Echo-II class

Bldr: Severodvinsk and Komsomolsk (In serv. 1960-67)

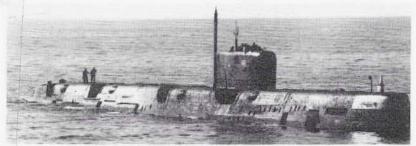


Echo-II with two of the four pairs of SS-N-3 missile tubes elevated

U.S. Navy



Echo-II class



Echo-II class

1974



Echo-II with SS-N-12 - note Front Door/Front Piece antenna deployed at forward end of sail, bulge on sail side, and relocated hinge bulge at forward end of the second missile-tube pair

D: 5,000/6,000 tons S: 20/23 kts Dim: $115.0 \times 9.0 \times 7.5$ A: 8/SS-N-3A or SS-N-12 — 6/533-mm TT (fwd) — 4/400-mm TT (aft)

Electron Equipt: Radar: 1/Snoop Tray, 1/Front Piece, 1/Front Door Sonar: 1/LF active, passive arrays, including Feniks.

M: 2 nuclear reactors, steam turbines; 2/4-bladed props; 30,000 hp Man: 90 tot.

Remarks: Approximately six to date have been modified to launch SS-N-12; they have a bulge on either side of the sail and a bulge at the forward ends of the missile tubes abreast the sail. The Echo-II must be surfaced to launch, the tubes elevating in pairs to fire. The forward part of the sail rotates 180° to expose the Front Door/Front Piece guidance radar. One unit has been converted to an auxiliary function. One Echo-II may be named Dekabrist.

CRUISE-MISSILE ATTACK SUBMARINES (DIESEL-POWERED)

(Soviet Type: PLRK = Podvodnaya Lodka Raketnaya Krylataya = Cruise-Missile Submarine)

 16 Juliett class Bldr: Gorkiy SY (In serv. 1961-63)



Juliett class

R. Neth. Navy, 1983



Juliett class

R. Neth. Navy, 1983

CRUISE-MISSILE ATTACK SUBMARINES (continued)

D: 3,000/3,750 tons **S**: 16/8 kts **Dim**: $90.0 \times 10.0 \times 7.0$ A: 4/SS-N-3A-6/533-mm TT (fwd)-4/400-mm TT (aft)

Electron Equipt: Radar: 1/Snoop Slab, 1/Front Piece, 1/Front Door EW: 1/Stop Light

Sonar: 1/MF active, passive arrays

M: 2 diesels, electric drive; 2 props; 5,000 hp

Range: 9,000/7 (snorkel) Man: 80 tot.

Remarks: Missiles are in paired tubes, elevating to fire, as on the Echo-II class. Since 1981, six have been based in the Baltic.

Note: The last Whiskey Long Bin cruise-missile submarine is believed to have been discarded during 1985.

ATTACK SUBMARINES (NUCLEAR-POWERED)

(Soviet Type: PLA - Podvodnaya Lodka Atomnaya = Nuclear-Powered Submarine)

Bldr: Komsomolsk SY, Komsomolsk-na-Amur



Akula class

U.S. Navy, 1984

D: 7,500/10,000 tons **S:** 35 kts **Dim:** $113.0 \times 12.0 \times ...$ A: 6/650 or 533-mm TT (SS-N-16/21 missiles, torpedoes)

Electron Equipt: Radar:

Sonar: LF active/passive, passive array towed LF linear hydrophone array

M: 2 pressurized water nuclear reactors, steam turbines; 1/7-bladed prop; . . . hp

Remarks: First unit launched 7-84. Differs from Sierra in having a longer, more streamlined sail. Broader hull than preceding Victor series indicates probable use of "rafted" (sound-isolated) propulsion plant to greatly reduce radiated noise. Akula means "shark" in Russian; the NATO nickname was chosen because all the letters of the phonetic alphabet have been used to name recent classes. Steel hull.

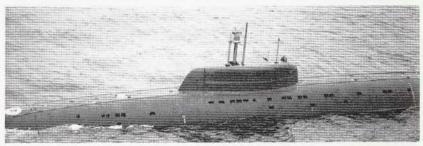
 ♦ 1 (+ . . .) Sierra class Leningrad

Bldr: Gorkiy SY and, possibly, United Admiralty SY,

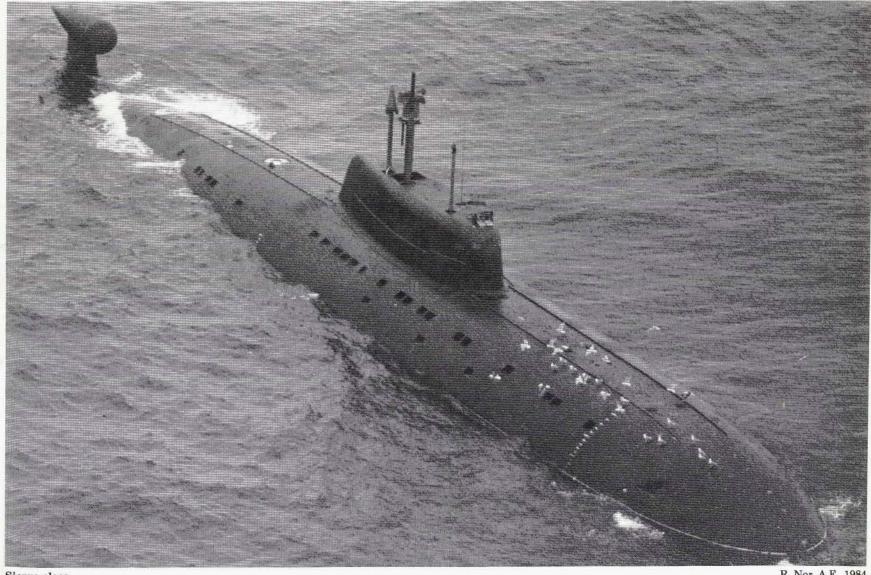


Sierra class

R. Nor. A.F., 1984



Sierra class - detail of flat-topped sail, showing back-to-back radar antenna, with EW R. Nor. A.F., 1984 array surrounding base of antenna housing



Sierra class



Sierra class - note upper bridge to port, periscope to starboard R. Nor. A.F., 1984

D: 6,000/7,550 tons S: 34-36 kts Dim: 110.0 × 12.0 × . . . A: 6/650- and 533-mm TT (SS-N-16/21 missiles/torpedoes) Electron Equipt: Radar: 1/. . . (back-to-back antennas) Sonar: LF suite, towed passive hydrophone array M: 2 pressurized water reactors; 1/7-bladed prop; . . . hp

REMARKS: First unit launched 7-83 at Gorkiy and transferred via river/canal system to Severodvinsk for completion. Differs from Akula in having a blunter, shorter sail and in lacking a towed communications buoy housing abaft the sail; probably has the same propulsion plant, optimized for radiated noise reduction. May have a titanium hull, if so, this is a successor to the Alfa, while the Akula may be considered as a successor to the Victor-III.

 1 (+ . . .) Mike class Bldr: Severodvinsk SY



Mike class - artist's rendering

U.S. D.O.D., 1984

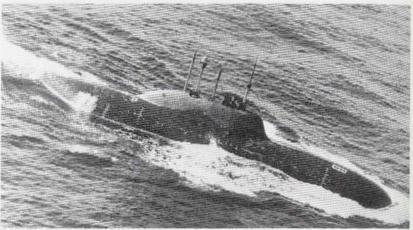
D: 5,000/7,000 tons S: 36-38 kts Dim: $122.0\times12.0\times9.0$ A: 6/650- or 533-mm TT (SS-N-15/16/21 missiles, torpedoes) Electron Equipt: Radar:

Sonar: LF suite

M: 2 reactors; 1/7-bladed prop; approx. 60,000 hp

REMARKS: First unit launched 6-83, with a second believed to be under construction. Hull built of titanium, and reactor may employ liquid metal coolant, as in the Alfaclass. Lacks the towed passive linear hydrophone array housing atop the rudder of the Akula, Sierra, and Victor-III classes.

• 6 Alfa class Bldr: Admiralty (Sudomekh) SY, Leningrad, and Severodvinsk SY (In serv. 1979-83)



Alfa-class SSN - note smooth blending of sail to hull

U.S. Navy, 1980



Alfa class

M.O.D., Norway

D: 2,900/3,680 tons S: 43–45 kts (sub.) Dim: $81.4\times9.5\times7.0$ A: 6/533-mm TT (with SS-N-15 missiles, torpedoes)

Electron Equipt: Radar: 1/Snoop Tray-EW: 1/Brick Pulp, 1/Brick Spit, 1/Park Lamp D/F

Sonar: 1/LF active, passive arrays

M: 1 nuclear reactor, steam turbines; 1/7-bladed prop; 45,000 hp

Man: 45 tot.

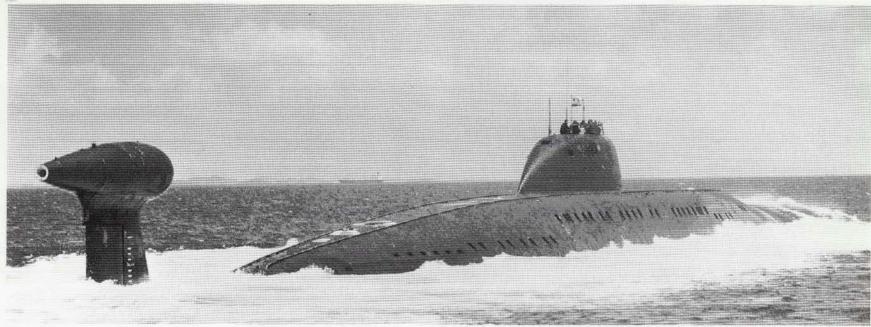
Remarks: The prototype, completed 1972, was scrapped about 1974, but the class later entered production as the world's fastest and deepest-diving (over 900 m) combatant submarine. The pressure hull is constructed of titanium, and the ships are highly automated. High speeds are achieved through use of a very "dense" propulsion plant, with safety and accessibility standards much less than those of the West. The reactors use a lead-bismuth mixture as coolant. The second entered active service in 1979.

 21 Victor-III class Bldrs: Admiralty SY, Leningrad, and Komsomolsk SY (In serv. 1978-85)



Victor-III - showing tandem 8-bladed propeller

U.S. Navy, 1983



Victor-III — note towed linear hydrophone array pod atop the vertical stabilizer



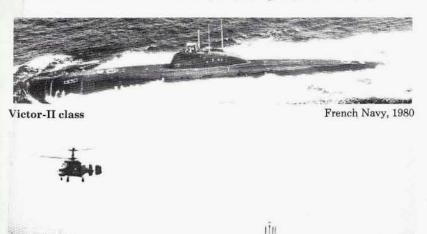
Victor-III - with cylindrical fairing on deck before sail

U.S. Navy, 1982

D: 4,800/6,300 tons **S:** 29 kts (sub.) **Dim:** $106.0 \times 10.0 \times 7.0$ A: 6/650- and 533-mm TT (SS-N-15 and/or SS-N-16 missiles, torpedoes) Electron Equipt: Radar: 1/Snoop Tray - Sonar: 1/LF active, passive arrays M: 2 reactors, steam turbines; 1/tandem 8-bladed prop; 30,000 hp (plus 2 small props for maneuvering) Man: 85 tot.

Remarks: Further lengthened over basic Victor-I; distinguished by large teardropshaped pod atop vertical stabilizer. The pod houses a towed linear passive hydrophone array. At least one unit has a 10-m fairing on deck forward of the sail. Most employ an unusual 8-bladed propeller, consisting of two tandem 4-bladed props oriented 22.5deg. apart and co-rotating; others have a standard 7-bladed prop.

Bldr: Admiralty SY, Leningrad (In serv. 1972-78) 7 Victor-II class



Victor-II class

U.S. Navy, 1984

D: 4,500/5,700 tons S: 30 kts Dim: $100.0 \times 10.0 \times 7.0$ A: 6/533- and 650-mm TT (SS-N-15 and/or SS-N-16 missiles, torpedoes)

M: 2 nuclear reactors, steam turbines; 1/5-bladed prop (plus 2 small props for maneuvering); 30,000 hp

Man: 80 tot.

Remarks: One went into service in each of the years 1972, 1974, and 1975, two in 1976, and one each in 1977 and 1978. Longer than Victor-I, without pronounced hump on forward casing. Have a VLF comms-buoy housing within the casing abaft the sail. Some may have propellers as per the Victor-III class.

Bldr: Admiralty SY, Leningrad (In serv. 1968-75) ♦ 16 Victor-I class

50 Let SSR 15 others



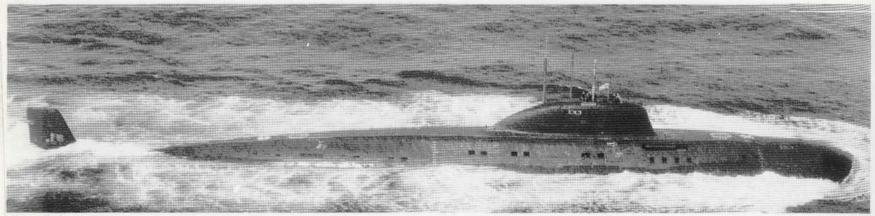
Victor-I class

French Navy, 1984



Victor-I class

U.S. Navy, 1984



Victor-I class

French Navy, 1984

D: 4,300/5,100 tons **S**: 30 kts **Dim**: $95.0 \times 10.0 \times 7.0$

A: 6/533-mm TT (SS-N-15 missiles, torpedoes)

Electron Equipt: Radar: 1/Snoop Tray-EW: 1/Brick Pulp, 1/Brick Spit

Sonar: 1/LF active passive arrays

M: 2 nuclear reactors, steam turbines; 1/5-bladed prop; 30,000 hp (2 small,

2-bladed props for slow speeds)

Man: 80 tot.

Remarks: Completed two per year between 1968 and 1975. Diving depth: 600 m max.

♦ 1 (+10) Yankee class Bldr: Severodvinsk SY and Komsomolsk SY (In serv. 1967-1974)

D: 7,900/10,000 tons **S:** 27 kts **Dim:** $131.0 \times 12.0 \times 9.0$

A: 6/533-mm TT (bow)

Electron Equipt: Radar: 1/Snoop Tray

Sonar: LF suite, passive arrays

M: 2 pressurized water reactors, steam turbines; 2/5-bladed props; 45,000 hp

Man: 80 tot.

Remarks: These are former ballistic-missile submarines that have had their 16 SS-N-6 tubes disabled in compliance with the U.S.-Soviet SALT agreements. As more Delta-II and Typhoon ballistic-missile submarines are built, more Yankees will receive similar treatment in order to keep the number of submarine-launched ballistic-missile tubes at no more than 950. It is believed that, as the Yankees are relatively new, the Soviet Navy is probably adapting them for some other purpose, probably as attack submarines, or, possibly, as minelayers. The first unit completed alteration and reactivated 1984. One other unit reappeared in 1982, reconfigured to launch cruise missiles.

Bldr: Komsomolsk (In serv. 1960-62) • 5 Echo class



Echo class

U.S. Navy, 1975



Echo class-with periscope, Stop Light EW, D/F loop, etc. raised

men died. All in Pacific Fleet. ♦ 1 (+4) Modified Hotel class Bldr: Severodvinsk SY (In serv. 1965)

Electron Equipt: Radar: 1/Snoop Tray—Sonar: 1/med. freq.
M: 2 nuclear reactors, steam turbines; 2/5-bladed props; 25,000 hp
Man: 75 tot.

Remarks: Former cruise-missile submarines that carried six SS-N-3C. Converted circa

1970-75. One, involved in a casualty 20-8-80, had to be towed to Vladivostok; several

D: 5,000/6,000 tons **S:** 20/25 kts **Dim:** $115.0 \times 9.0 \times 7.0$

D: 4,500/5,500 tons **S:** 20/25 kts **Dim:** $110.0 \times 9.0 \times 7.5$

A: 6/533-mm TT fwd — 4/400-mm TT aft Electron Equipt: Radar: . . . Man: . . .

A: 6/533-mm TT (fwd) - 4/400-mm TT (aft)

Sonar: . .

M: 2 nuclear reactors, steam turbines; 2/6-bladed props; 30,000 hp

Remarks: Missile tubes removed. The first of these submarines has reportedly been altered to perform the same role as the three Golf-class command-and-communications submarines. The others will probably either emerge similarly reconfigured or altered as straight attack submarines, despite their obsolescence.

 12 November class Bldr: Severodvinsk SY (In serv. 1958-62)

LENINSKIY KOMSOMOL LENINETS 10 others



November class

D: 4,500/5,300 tons **S:** 30 kts (sub.) **Dim:** $110.0 \times 9.0 \times 7.7$

A: 8/533-mm TT (fwd) - 4/400-mm TT (aft) - 32 torpedoes or mines

Electron Equipt: Radar: 1/Snoop Tray

Sonar: 1/MF active, passive arrays

M: 2 nuclear reactors, steam turbines; 2 (4- or 6-bladed) props; 30,000 hp

Man: 80 tot.

REMARKS: First unit completed 8-58. One of this class was lost off Cape Finisterre in 4-70. Another was apparently scrapped 1982-83. Leninskiy Komsomol, the U.S.S.R.'s first nuclear-powered ship, was commissioned 4-8-58; she later made the Soviet Navy's first trip to the North Pole. Obsolescent.

ATTACK SUBMARINES (DIESEL-POWERED)

(Soviet Type: PL-Podvodnaya Lodka = Submarine)

♦ 6 (+ . . .) Kilo class Bldr: Komsomolsk-na-Amur SY, Gorkiy SY, and United Admiralty (Sudomekh) SY, Leningrad (In serv. 1982-. . .)



Kilo class-note small topside rudder

JMSDF, 1984



Kilo class

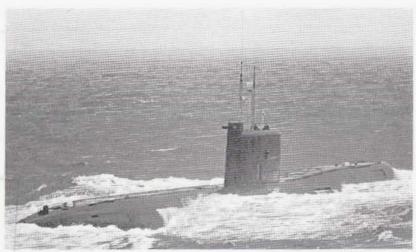
JMSDF, 1984

D: 2,500/3,000 tons S: 12/16 kts Dim: 70.0 × 9.9 × 6.5 A: 6/533-mm TT (12 torpedoes)—1/SAM system Electron Equipt: Radar: 1/Snoop Tray—Sonar: LF suite M: 2 diesels, electric drive; 1/6-bladed prop; . . . hp Man: approx. 60 tot.

REMARKS: Function uncertain; may be intended to replace Whiskey/Romeo-class submarines in the "medium-range" category. First unit launched 9-80, entering service 4-82. The second launched 8-81. Production now seems to be 2 or more per year, with some being for export to such clients as India. Reported to have some form of surfaceto-air missile system in the sail. Gorkiy and Leningrad production for export.

* 19 Tango Class

Bldr: Gorkiy SY (In serv. 1972-82)



Tango class

U.S. Navy, 1-85



Tango-class sail/upper bridge area

1976



Tango class

French Navy, 6-84



Tango class

U.S. Navy, 1983

D: 3,200/3,900 tons S: 20/16 kts Dim: 92.0 × 9.0 × 7.0 A: 10/533-mm TT (6 fwd, 4 aft) (SS-N-15 missiles, torpedoes)

Electron Equipt: Radar: 1/Snoop Tray - EW: 1/Brick Pulp, 1/Brick Spit, D/F Sonar: 1/LF active

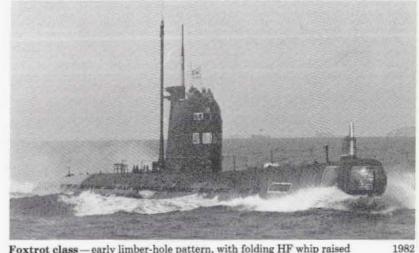
M: 3 diesels, electric motors; 3 props; 6,000 hp Man: 72 tot.

REMARKS: Two entered in 1972, and roughly two per year were built. Hull sheathed in sonar-absorbent rubber compound. Have significantly greater battery capacity then the Foxtrot class.

Bldr: Admiralty/Sudomekh SY, Severodvinsk SY (In serv. * 58 Foxtrot class 1957-68)

CHELYABINSKIY KOMSOMOLETS KOMSOMOLETS KAZAKHSTANA KUIBISHEVSKIY KOMSOMOLETS Magnitogorskiy Komsomolets

UL'YANOVSKIY KOMSOMOLETS VLADIMIRSKIY KOMSOMOLETS YAROSLAVSKIY KOMSOMOLETS 51 others

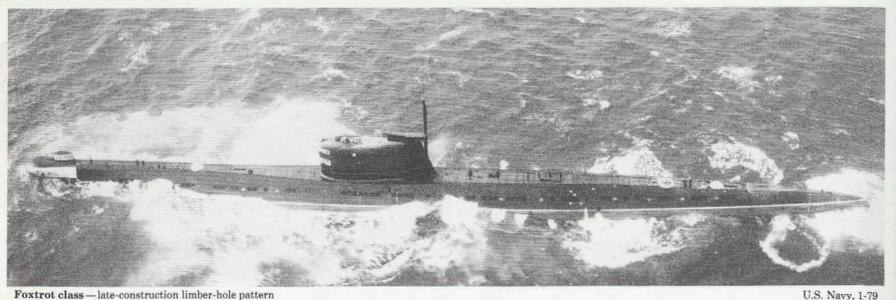


Foxtrot class - early limber-hole pattern, with folding HF whip raised



Foxtrot class - later limber-hole pattern

U.S. Navy, 3-84



Foxtrot class-late-construction limber-hole pattern



Globus - a Foxtrot on an oceanographic research cruise LSPH S. Given, R.A.N., 1981

D: 1,950/2,400 tons **S:** 16/15.5 kts **Dim:** $91.5 \times 7.5 \times 6.0$ A: 10/533-mm TT (6 fwd, 4 aft) - 22 torpedoes or 44 mines Electron Equipt: Radar: 1/Snoop Tray—EW: 1/Stop Light Sonar: 1/MF active, passive arrays M: 3 diesels of 2,000 hp, electric motors; 3 props; 5,300 hp (sub.) Endurance: 70 days Range: 11,000/8 (snorkel), 350/2 (sub.)

REMARKS: Foxtrot is a "long-range" submarine, and the design is a development of that of the Zulu class, with a large bow passive sonar array and a more streamlined sail. When used in oceanographic research service, Foxtrots are given temporary astronomical names; to date Sirius, Saturn, Yupiter, Regul, and Globus have been applied. Between 1967 and 1983, 17 were built for export at Leningrad: eight to India, six to Libya, and three to Cuba. Several Soviet Navy units have been lost. Early units are approaching obsolescence.

3 Modified Golf class

Man: 8 officers, 70 men



Modified Golf class

Ships of the World, 5-84

D: 2,300/2,700 tons **S:** 12 kts (sub.) **Dim:** $100.0 \times 8.5 \times 6.6$ A: 10/533-mm TT (6 fwd, 4 aft)

Electron Equipt: Radar: 1/Snoop Tray-EW: 1/Stop Light Sonar: 1/MF active; passive arrays

M: 3 diesels of 2,000 hp, electric motors; 3 props; 5,300 hp (sub.) Endurance: 70 days Range: 9,500/5 (snorkel) Man: 80 tot.

Remarks: Three missile tubes removed. Apparently converted in 1978 as submersible command ships. Structure aft supports folding whip antennas; there are similar whips on either side of the sail. Sail extension houses VLF buoy antenna. A Hotel nuclearpowered ballistic-missile submarine has received a similar conversion.

Bldr: Baltic SY, Leningrad (In serv. 1957-60) 6 Romeo class



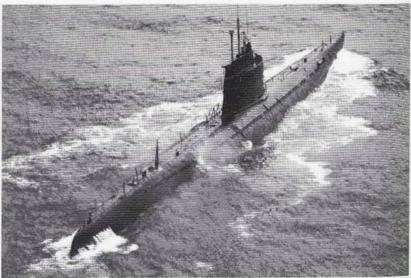
Romeo class - this unit later transferred to Algeria

D: 1,330/1,700 tons S: 15.5/13 kts Dim: 77.0 × 6.7 × 4.9 A: 8/533-mm TT (6 fwd, 2 aft) - 14 torpedoes or 28 mines Electron Equipt: Radar: 1/Snoop Plate-EW: 1/Stop Light Sonar: 1/MF active; passive arrays

M: 2 Type 37D diesels of 2,000 hp, electric motors; 2 props; 3,000 hp (sub.) Endurance: 45 days Range: 7,000/5 (snorkel) Man: 56 tot.

Remarks: Diving depth: 270-300 meters. Six transferred to Egypt, two to Bulgaria, two to Algeria, and two to Syria. Also built in China and North Korea. Intended as Whiskey medium-range successor, but only about 20 built. Most have bridge projecting forward from the sail, but one unit (since transferred to Algeria) had the lower portion of the sail extended forward to house a towing hawser drum.

2 Zulu-IV class Bldr: Sudomekh SY, Leningrad (In serv. 1952-57)



Zulu-IV class

U.S. Navy, 8-84

D: 1,900/2,350 tons S: 18/16 kts Dim: 90.0 × 7.5 × 6.0 A: 10/533-mm TT (6 fwd, 4 aft) — 22 torpedoes or 44 mines

Endurance: 70 days Range: 9,500/8 (snorkel) Man: 70 tot.

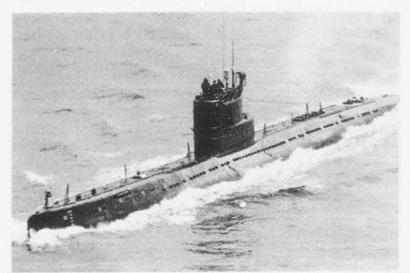
Electron Equipt: Radar: 1/Snoop Plate

Sonar: 1/med.-freq.; small passive array

M: 3 Type 37D diesels of 2,000 hp, electric drive; 3 props; 5,300 hp (sub.)

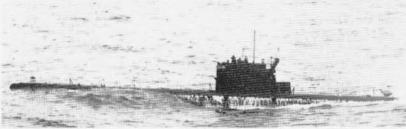
Remarks: Between 1956 and 1957, several (since scrapped) were converted as Zulu-V ballistic-missile submarines, the world's first of their type; each had two tubes for surface launch of SS-N-4. Sixteen other Zulu-IVs have been scrapped. Earlier configurations (Zulu-I to Zulu-III) had deck guns, AA guns in the sail, and no snorkel; all later updated to Zulu-IV standard. Four additional survivors are in reserve. Two have served in "oceanographic research" roles as Vega and Lira.

53 Whiskey class Bldrs: Baltic SY, Leningrad; Marti SY, Nikolayev; Gorkiy SY; Komsomolsk-na-Amur SY (In serv. 1949-57)



Whiskey class

1977



Whiskey class

U.S. Navy, 11-84

D: 1,050/1,350 tons S: 17/13.5 kts Dim: 76.0 × 6.3 × 4.8 A: 6/533-mm TT (4 fwd, 2 aft) — 12 torpedoes or 24 mines

Electron Equipt: Radar: 1/Snoop Plate

Sonar: 1/Tamir 5 MF active; small passive array
M: 2 Type 37D, 2,000-hp diesels, electric motors; 2 props; 2,500 hp (sub.)
Endurance: 40-45 days Range: 6,000/5 (snorkel) Man: 50 tot.

Remarks: Built in prefabricated sections, these strong, uncomplicated boats have proven quite satisfactory. Approximately 236 were built in the U.S.S.R., with China also having built the design. Despite the age, a number remain quite active. Considered to be "medium-range" submarines. Twelve were converted to cruise-missile boats. Four were modified as radar-picket submarines. As many as sixty additional Whiskey-class units are in reserve. Some have been transferred to Bulgaria, Egypt, Poland, Albania, China, and Indonesia. One active Baltic Fleet boat is named Pshovskiy Komsomolets.

AUXILIARY SUBMARINES

• 1 (+...) Uniform class Bldr: United Admiralty (Sudomekh) SY, Leningrad (L: 6-82)

D: 2,000 tons (sub.) S: . . . Dim: . . . × . . . × . . . A: . . . M: Nuclear reactor; . . . prop; . . . hp

Remarks: Apparently intended for research or special operations. The first Soviet single-hulled nuclear-powered submarine.

Note: An even smaller nuclear-powered submarine, reportedly similar to the U.S. Navy's NR-1, was launched from the same facility at the end of 1983 and has been designated the Xray class by NATO.

• 1 converted Echo-II class

Remarks: One Echo-II-class nuclear-powered cruise-missile submarine has been modi-

fied for an unknown research purpose. The eight tubes for SS-N-3A missiles have apparently been removed. May be intended for special operations with *Spetsnaz* sabotage swimmers. General data listed earlier otherwise apply.

1 Lima-class research submarine Bldr: Admiralty SY, Leningrad (In serv. 1978)



D: 2,000/2,450 tons S: . . . Dim: 86.0 × 9.5 × 7.4

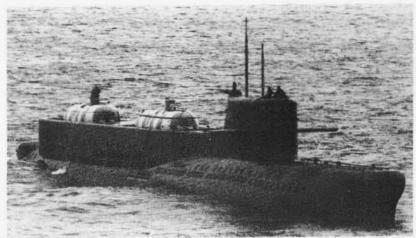
A: None M: Diesels, electric drive; . . . props; . . . hp Man: . . .

Remarks: Function not available. Sail, set well aft on unusually bulky hull, has forward extension housing an active sonar transducer and has fixed radar mast.

2 India-class salvage submarines Bldr: Komsomolsk-na-Amur SY (In serv. 1979-80)



India class - with two salvage submersibles; note the sail-mounted bow planes 1980



The Northern Fleet India with two salvage submersibles in their docking wells

U.S. Navy, 1982



A closer view of one of the 11-meter-long salvage submersibles carried by the India class

U.S. Navy, 1982

D: 3,900/4,800 tons S: 15/15 Dim: 106.0 × 10.0 × . . .

A: Probably none Electron Equipt: Radar: . . . —Sonar: 1/med.-freq.; passive arrays

M: . . . diesels, electric motors; 2 props; . . . hp Man: . . .

Remarks: Carry two small salvage/submarine rescue submersibles in wells on after casing. Hull designed for surface cruising. May not have armament, considering function and the narrow hull configuration forward. One unit remains in Pacific, the other transited the Arctic to the Northern Fleet, 1980.

 4 Bravo-class target training submarines molsk-na-Amur (In serv. 1968-70)

Bldr: Komsomolsk SY, Komso-

AUXILIARY SUBMARINES (continued)



(A-1/10000-0000000)

D: 2,400/2,900 tons **S**: 14/16 kts **Dim**: $73.0 \times 9.8 \times 7.3$

A: 6/533-mm TT (fwd)

Electron Equipt: Radar: 1/Snoop Tray-Sonar: 1 passive array

M: Diesel-electric drive; 1 prop; 4,500 hp Man: 65 tot.

Remarks: Configured as "hard" targets for torpedo firing training, they may also have a training role and, if indeed armed, could be used as attack subs in wartime.

Note: In addition to the submarines classified as auxiliaries above, a number of units of the combatant classes listed earlier are also employed in research or auxiliary duties. These include Foxtrot- and Zulu-class submarines used in oceanographic research, Whiskey- and Romeo-class submarines used in weapons and sensors development work, the various Golf and Hotel conversions for trials with new ballistic missiles, and the seven Hotel-II- and Golf-II-class submarines altered as command and control submarines.



Bravo class

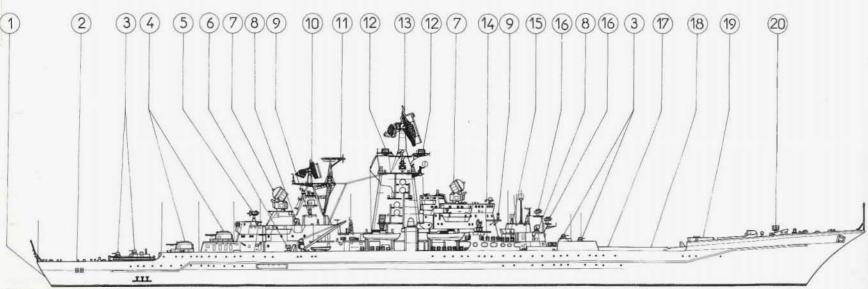
U.S. Navy, 1979

MINIATURE SUBMARINES (SUBMERSIBLES)

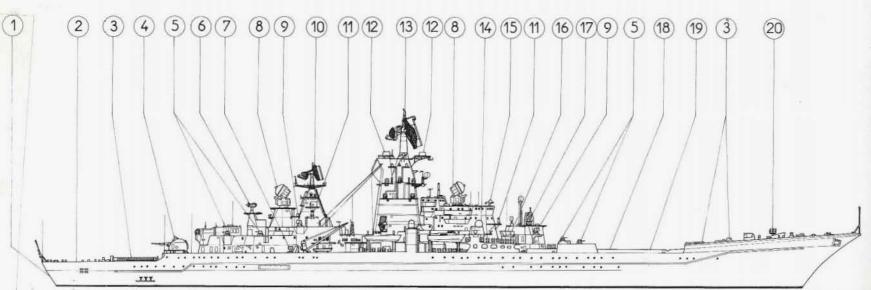
The Soviet Navy possesses a number of small submersibles for clandestine operations by *Spetsnaz* forces. Some are probably similar to the salvage submersibles carried by the India class. Many other small submersibles, Soviet and foreign-built, are used for military and civilian research purposes.

GUIDED-MISSILE CRUISERS (NUCLEAR-POWERED)

| 2 (+1) | Kirov class | Bldr: Baltic SY, Leningrad | | | | |
|--------|-------------|----------------------------|----------|--|--|--|
| | Laid down | L | In serv. | | | |
| Kirov | 1973 | 12-77 | 9-80 | | | |
| FRUNZE | 1-78 | 23-5-81 | 8-84 | | | |
| N | | 4.4.4 | 2 2 2 | | | |



Kirov 1. variable-depth sonar 2. helicopter pad 3. 30-mm gatling AA guns 4. 100-mm DP gunmounts 5. Kite Screech radar director for 100-mm guns 6. RBU-1000 ASW RL 7. Top Dome radar director for SA-N-6 8. Bass Tilt radar director for 30-mm AA 9. Tin Man optronic device 10. Top Steer radar 11. Vee Tube HF comms. antenna 12. Round House TACAN 13. Top Pair 3-D early-warning radar antenna 14. Palm Frond navigational radar 15. SA-N-4 SAM launcher 16. Eye Bowl radar director for SS-N-14 17. SS-N-19 cruise-missile launchers 18. SA-N-6 vertical SAM launch silos 19. twin SS-N-14 ASW/SSM launcher 20. RBU-6000 ASW RL L. Gassier



Frunze 1. variable-depth sonar 2. helicopter pad 3. SA-N-9 vertical-launch SAM silos 4. twin 130-mm DP gunmount 5. 30-mm gatling AA 6. Kite Screech radar director for 130-mm guns 7. RBU-1000 ASW RL 8. Top Dome radar director for SA-N-6 9. Bass Tilt radar director for 30-mm AA 10. Top Steer radar antenna 11. Tin Man optronic device 12. Round House TACAN 13. Top Pair 3-D early-warning radar antenna 14. Big Ball SATCOMM antenna radome 15. Palm Frond navigational radar 16. SA-N-4 SAM launcher 17. Pop Group track-while-scan radar director for SA-N-4 18. SS-N-19 cruise-missile launchers 19. SA-N-6 vertical SAM launch silos 20. RBU-6000 ASW RL L. Gassier



Kirov

French Navy, 1984



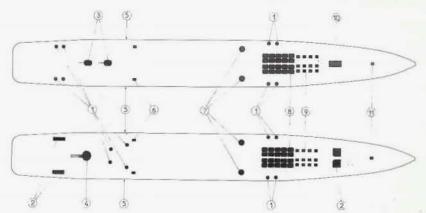
Kirov

French Navy, 1984



Kirov, showing VDS door in stern

U.S. Navy, 1984



Kirov (top) and Frunze compared 1. 6-barreled 30-mm gatling AA 2. SA-N-9 silos (8 missiles each) 3. 100-mm single-mount DP 4. 130-mm twin-mount DP 5. quintuple torpedo tubes 6. RBU-1000 ASW RL (6-tubed) 7. SA-N-4 twin SAM launchers (20 missiles each) 8. SS-N-19 inclined cruise-missile launch-tube hatches 9. SA-N-6 vertical-launch SAM hatches (8 missiles to each position) 10. RBU-6000 ASW RL (12-tubed)



Frunze, showing twin 130-mm gun aft

M.O.D., Bonn, 11-84

D: 24,000 tons (28,000 fl) S: 32 kts

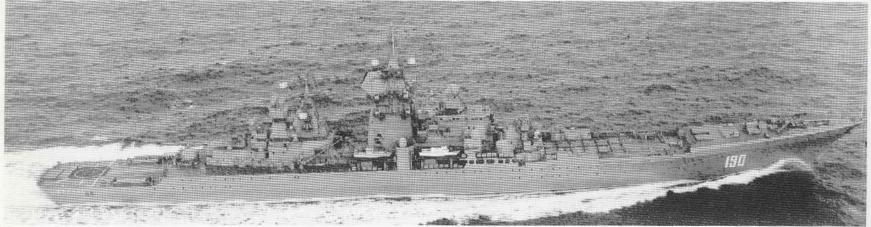
Dim: 248.0 (230.0 wl) × 28.0 (24.0 wl) × 8.8

Dim: 248.0 (230.0 wl) × 28.0 (24.0 wl) × 8.8

A: Kirov: 20/SS-N-19 SSM (20 inclined tubes) — 12/SA-N-6 vertical SAM launchers (96 missiles) — 2/SA-N-4 SAM syst. (II × 2, 40 missiles) — 2/100-mm DP (I × 2) — 8/30-mm gatling AA (I × 8) — 1/SS-N-14 ASW cruise-missile launcher (II × 1, 14-16 missiles) — 10/533-mm TT (V × 2) — 1/RBU-6000 ASW RL (XII × 1) — 2/RBU-1000 ASW RL (VI × 2) — 3/Hormone-A and/or -B helicopters or Helix-A.

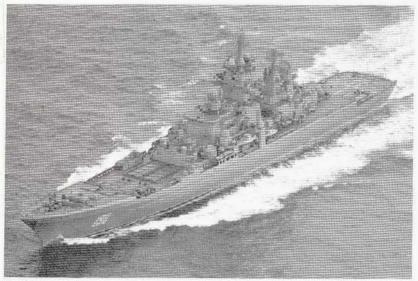
Frunze: 20/SS-N-19 SSM (20 inclined tubes) — 12/SA-N-6 vertical SAM

launchers (96 missiles) -16/SA-N-9 vertical SAM launchers, not yet operational, (128 missiles) -2/SA-N-4 SAM syst. (II \times 2, 40 missiles) -2/130 - mm DP (II \times 1) -8/30 - mm gatling AA (I \times 8) -10/533 - mm TT



Frunze

French Navy, 1984



Frunze

U.S. Navy, 11-84

 $(V \times 2) - 1$ /RBU-6000 ASW RL $(XII \times 1) - 2$ /RBU-1000 ASW RL $(VI \times 2) - 2$ /Helix-A and 1/Hormone-B helicopters

Electron Equipt: Kirov: Radar: 3/Palm Frond, 1/Top Pair, 1/Top Steer, 2/Top Dome, 2/Pop Group, 2/Eye Bowl, 1/Kite Screech, 4/Base Tilt, 1/Fly Screen landing aid

Screech, 4/Base Tilt, 1/Fly Screen landing at IFF: 1/Salt Pot transponder—E/O: 4/Tin Man Sonar: 1/LF bow-mounted, 1/LF VDS

EW: 8/Side Globe, 4/Rum Tub, 10/Bell-series, 2/chaff RL (II \times 2)

TACAN: 2/Round House — SATCOMM: 2/Punch Bowl Frunze: Radar: 3/Palm Frond, 1/Top Steer, 2/Top Dome, 2/locations for future SA-N-9 f.c., 2/Pop Group, 1/Kite Screech, 4/Bass Tilt, 1/Fly

Screen
IFF: . . . —E/O: 4/Tin Man
Sonar: as for *Kirov*EW: 8/ . . . , 10/Bell-series, 2/chaff RL (II × 2)
TACAN: 2/Round House

SATCOMM: 2/Big Ball, 2/Punch Bowl

M: CONAS: 2 nuclear reactors, 2 oil-fired superheat boilers, steam turbines; 2 props; 150,000 hp

Range: Effectively unlimited Fuel: 2,500 tons Man: Approx. 800 tot.

REMARKS.

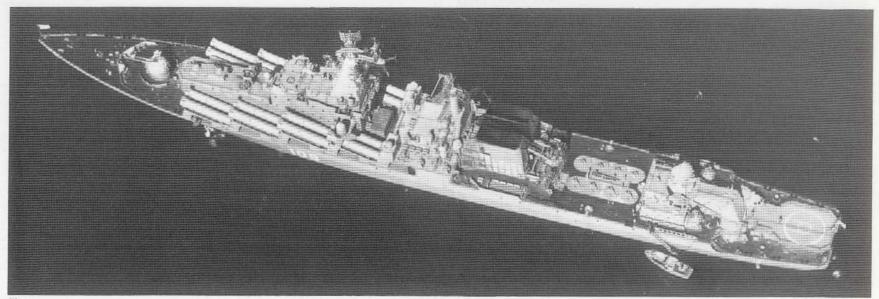
- 1. General: The Kirov is the world's largest "cruiser" and might best be termed a "battlecruiser." The Soviet type-designation applied has been merely RKR—Raketnyy Kreyser (Missile Cruiser). The ship is capable of independent operations, due to the virtual autonomy conveyed by the nuclear propulsion system, but it would also make an ideal escort for the forthcoming nuclear-powered carrier. The Kirov and Frunze differ considerably in armament and sensors, and the third unit, laid down some years later, may differ further still. Frunze deployed to the Pacific in 9-10-85, while Kirov is in the Northern Fleet.
- Hull: On Kirov the high forecastle shelters the reloadable SS-N-14 ASW cruise-missile launcher within a redoubt or cul-de-sac. A long raised strake down either side of the hull acts as an external hull stiffener, as on smaller Soviet warships. The helicop-

ter hangar is beneath the forward portion of the fantail, with an elevator delivering the aircraft to the flight deck. The steeply raked stern has a 9-m broad centerline recess for the VDS installation, whose door when closed is raked forward past the vertical. The screws appear to be mounted unusually far forward. Two solid-stores replenishment stations are fitted: one amidships to port, and one folding station forward to port, abreast the SA-N-6 system; both employ the sliding-stay, constant-tension concept. Oil and water replenishments are handled at stations on either beam abreast the Kite Screech radar. Frunze's forward transfer gear is considerably more compact.

- 3. Propulsion: The two circular reactor access hatches can be seen amidships, just abaft the enormous twin exhaust uptakes for the unusual CONAS (Combined Nuclear and Steam) propulsion system. The steam generated by the reactors is either led to oil-fired superheaters that could theoretically boost the energy output of the steam by 50 to 55% by superheating it; this system would be cut in when maximum speeds were required, and, given the size of the ship, sufficient fuel for global endurance at maximum speed could be accommodated. Alternatively (and more likely), the oil-fired boilers provide steam to completely separate turbines, which are geared to the same drive shafts as the nuclear-supplied turbines. One stack probably serves the oil-fired boilers, while the other serves to ventilate the reactor spaces. Speed on reactors alone (90,000 hp) would be about 24 kts.
- 4. Armament: The launch tubes for the 20 SS-N-19 anti-ship missiles are buried within the hull at a fixed angle of 40-45-degree elevation, in four rows of five, forward of the superstructure. Before these are the 12 vertical launchers for SA-N-6; each has a door, beneath which is a rotating magazine containing 8 missiles. Targeting data, for the SS-N-19, with its 300-nautical-mile maximum range, can come either from a Hormone-B helicopter embarked on the ship, or from satellites, via the Punch Bowl satellite communications antennas on either side of the ship. In Kirov only, the SS-N-14 ASW cruise-missile system is the first reloadable installation in a Soviet ship, employing a magazine forward of the launcher, buried within the forecastle. The gatling guns are paired and located so as to cover all four quadrants; each pair is served by a Bass Tilt radar director and a manned, optical backup director. Frunze has a single twin 130-mm gunmount in place of the two 100-mm mounts and lacks the SS-N-14 system; instead, eight SA-N-9 launchers are buried in the forecastle, while eight more are located in place of the after 30-mm gatling guns, four per side (the gatling guns are mounted on the aft superstructure). The two directors for SA-N-9 were yet to be mounted by 9-85 and are intended to be positioned abaft the Kite Screech aft and between the two Pop Group directors forward; the SA-N-4 installation may be a temporary stopgap.
- 5. Electronic equipment: As might be expected, the communications antenna array is extensive and diverse and includes satellite communications equipment and longrange HF gear. There are four stabilized "Tin Man" electro-optical sensors, covering all four quadrants, as well as smaller remote t.v. cameras. Two Bob Tail radiometric sextant antennas are housed in spherical enclosures. A Fly Screen microwave landing approach radar is mounted on a starboard platform on the after tower mast. The VDS employs a lens-shaped "fish" about 4 m in diameter to house the transducer and has a twin boom-mounted empennage with horizontal and vertical control surfaces. In addition to a low-frequency bow-mounted sonar, there is probably a medium-frequency set for fire-control purposes (including depth determination) for the RBU-series rocket launchers. Frunze lacks the large Vee tube HF communications antenna but has port-and-starboard Big Ball SATCOMM antenna radomes; she has a newer model EW suite also.

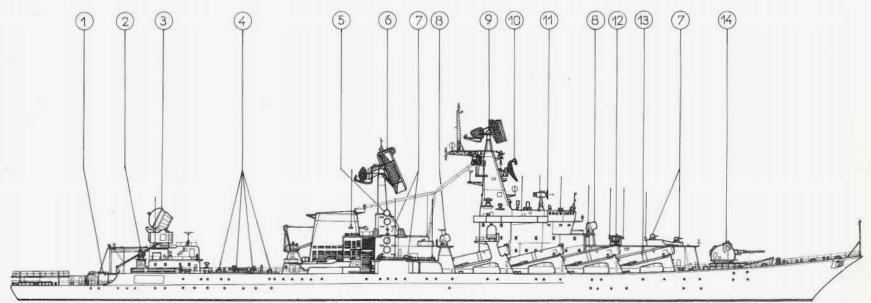
GUIDED-MISSILE CRUISERS

| nmuna SY, Nikolayev |
|---------------------|
| n serv. |
| 1982 |
| 1986 |
| 986-87 |
| - |



Slava

U.S. Navy, 8-84



Slava 1. SA-N-4 launchers port and starboard 2. Pop Group radar director for SA-N-4 3. Top Dome radar director for SA-N-6 4. SA-N-6 vertical launchers 5. Side Globe electronic warfare antennas 6. Top Pair 3-D early-warning radar 7. 30-mm gatling AA 8. Bass Tilt radar directors for 30-mm AA 9. Top Steer 3-D air-search radar 10. Front Door/Front Piece tracking radar for SS-N-12 11. Kite Screech fire-control radar for 130-mm DP 12. RBU-6000 ASW RL 13. SS-N-12 anti-ship missile tubes 14. twin 130-mm DP gunmount L. Gassier



Slava, amidships portion—note the boom of the huge boat crane stowed between the paired funnels and the blast deflectors abaft each pair of SS-N-12 cruise-missile launchers U.S. Navy, 1983



Slava

U.S. Navy, 1983



Nikolayev

U.S. Navy, 7-83



Slava French Navy, 10-83

D: 10,000 tons (12,500 fl) S: 32 kts

Dim: 186.0 × 20.3 × 8.0

A: 16/SS-N-12 SSM (II \times 8) -8/SA-N-6 vertical launch SAM groups (VIII \times 8, 64 missiles) -2/SA-N-4 SAM syst. (II \times 2, 40 missiles) -2/130-mm 70-cal. DP (II \times 1) —6/30-mm gatling AA (I \times 6) —10/533-mm TT (V \times 2) — 2/RBU-6000 ASW RL (XII \times 2) —1/Hormone-B helicopter Electron Equipt: Radar: 3/Palm Frond, 1/Top Pair, 1/Top Steer, 1/Top Dome,

2/Pop Group, 1/Kite Screech, 3/Bass Tilt, 1/Front Door-Front Piece

EW: 8/Slide Globe, 4/Rum Tub, numerous Bell-series, 2/Chaff RL (II × 2)

Sonar: LF hull mounted, MF VDS

M: 4 gas turbines; 2 props; 120,000 hp Man: 720 hp Range: 2,000/30; 8,800/15

Remarks: Slava first deployed from the Black Sea on 15-9-88. Unusual in having considerable equipment that is not the latest of its type in Soviet service, including the main battery, SS-N-12 missile system. There are two Punch Bowl targeting satellite data receivers. Four Tee Plinth electro-optical surveillance devices are installed. Typed Raketnyy Kreyser (Missile Cruiser) by the Soviet Navy. Fitted as flagships. Slava is attached to the Black Sea Fleet.

Only one Top Dome director is fitted for the SA-N-6 system, limiting its flexibility. The torpedo tubes are mounted behind shutters in the ship's sides, near the stern. Initially referred to by the NATO Code-name "Blk-Com-1" and later, briefly, as the "Krasina" class. The hangar floor is one-half-deck below the flight deck, which is



Slava

M.O.D., Bonn, 10-83

reached via an inclined ramp, the helicopter being maneuvered by a chain-haul system.

| Bldr: 61 Kommuna SY, Nikolay | | | | | |
|------------------------------|---|---|--|--|--|
| Laid down | L | In serv. | | | |
| 1969 | 1971 | 1973 | | | |
| 1970 | 1972 | 1975 | | | |
| 1971 | 1973 | 1976 | | | |
| 1972 | 1974 | 1977 | | | |
| 1973 | 1975 | 1978 | | | |
| 1975 | 1976 | 1979 | | | |
| 1976 | 1977 | 1980 | | | |
| | Laid down 1969 1970 1971 1972 1973 1975 | Laid down L 1969 1971 1970 1972 1971 1973 1972 1974 1973 1975 1975 1976 | | | |



Tallin

U.S. Navy, 4-85



Petropavlovsk—with higher hangar, small Round House TACAN radomes, and no RBU-1000 U.S. Navy, 3-82



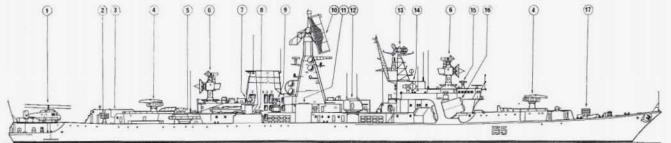
Tashkent

U.S. Navy, 12-84



Petropavlovsk

PH1 F. Barbante, U.S.N., 9-83



Kara class—Nikolayev 1. Hormone-A helicopter 2. RBU-1000 ASW RL 3. helicopter hangar 4. twin SA-N-3 launcher 5. quintuple 533-mm TT 6. Head Lights SA-N-3/SS-N-14 radar director 7. Bass Tilt 30-mm radar director 8. 30-mm gatling AA guns 9. Pop Group radar director for SA-N-4 10. Top Sail 3-D early-warning radar 11. twin SA-N-4 launcher 12. 76.2-mm DP 13. Head Net-C radar 14. Owl Screech radar director for 76.2-mm 15. Don-Kay nav. radar 16. SS-N-14 ASW/SSM 17. RBU-6000 ASW RL



Tashkent

Lts. Mason & Weaver, VF-111, U.S.N., 1984



Petropavlovsk

U.S. Navy, 3-82

D: 8,200 tons (9,700 fl) **S:** 34 kts **Dim:** $173.0 \times 18.6 \times 6.7$

A: 8/SS-N-14 (IV × 2, 8 missiles) — 2/SA-N-3 systems (II × 2, 44 Goblet missiles) — 4/SA-N-4 (II × 2, 40 missiles) — 4/76.2-mm DP (II × 2) — 4/30-mm gatling AA (II × 4) — 1/533-mm TT (V × 2) — 2/RBU-6000 ASW RL $(XII \times 2)$ --2/RBU-1000 ASW RL (VI \times 2) -1/Hormone-A helicopter—see remarks

Electron Equipt: Radar: 1/Don-2 or Palm Frond, 2/Don-Kay, 1/Top Sail, 1/Head Net-C, 2/Head Lights, 2/Pop Group, 2/Owl Screech, 2/Bass Tilt

Sonar: 1/LF hull-mounted, 1/MF VDS

EW: 8/Side Globe, 2/Bell Clout, 2/Bell Slam, 2/Bell Tap (or

4/Rum Tub), 2/chaff RL (II × 2)

IFF: 1/Salt Pot transponder (interrogation by search radars)

M: 4 gas turbines; 2 props; 120,000 hp

Range: 3,000/32; 8,000/15 Man: 30 officers, 490 men

Remarks: Soviet type designation: Bol'shoy Protivolodochnyy Korabl' (Large Anti-submarine Ship), a type considered to be more in the destroyer than the cruiser category. Petropavlovsk has two cylindrical Round House TACAN abreast the helicopter hangar, which is higher than on the other ships; she has no RBU-1000 rocket launchers. She and the *Tashkent* joined the Pacific Fleet in 1979. The *Azov* was a trials ship for SA-N-6 vertically launched surface-to-air missiles and has only one SA-N-3 launcher, forward; a Top Dome missile radar director is mounted aft; the ship has never deployed from the Black Sea. The last three built have incomplete EW suites, having been equipped to take 4 Rum Tub, as on Petropavlovsk and Kerch. Nikolayev is unique in having Square Head IFF interrogators on either side of the stack. SA-N-3, SA-N-4, and SS-N-14 can also be used against surface targets.



| | L | In serv. | | L | In serv. |
|--------------------|------|----------|----------------------|------|----------|
| KRONSHTADT | 1967 | 12-69 | Admiral Isachenkov | 1972 | 9-74 |
| Admiral Isakov | 1968 | 9-70 | Marshal Timoshenko | 1973 | 9-75 |
| Admiral Nakhimov | 1969 | 8-71 | VASILY CHAPAEV | 1975 | 10-16 |
| Admiral Makarov | 1970 | 8-72 | Admiral Yumashev | 1976 | 1-78 |
| Marshal Voroshilov | 1970 | 5-73 | Admiral Oktyabr'skiy | 1971 | 11-73 |



Admiral Makarov

U.S. Navy



Admiral Isachenkov

Ships of the World, 1984

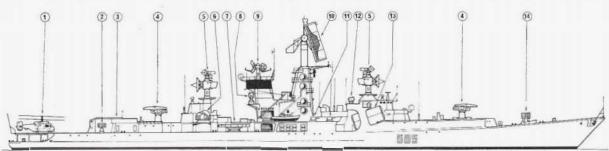


Admiral Nakhimov - without Bass Tilt radar directors



Marshal Timoshenko—note enlarged superstructure between bridge and tower mast, Bass Tilt radar directors on bridge wings, above SS-N-14 launchers

U.S. Navy, 1982



Kresta-II class 1. Hormone-A helicopter 2. RBU-1000 ASW RL 3. helicopter hangar 4. twin SA-N-3 launcher 5. Head Lights SA-N-3/SS-N-14 radar directors 6. twin 57-mm DP 7. quintuple 533-mm TT 8. Muff Cob radar director for 57-mm DP 9. Head Net radar 10. Top Sail 3-D early-warning radar 11. 30-mm gatling AA guns 12. Bass Tilt radar director for 30-mm AA 13. quadruple SS-N-14 launcher 14. RBU-6000 ASW RL Note: Drawing applies to Marshal Voroshilov, Admiral Oktyabr'skiy, and Admiral Isachenkov.

D: 6,200 tons (7,700 fl) S: 34 kts Dim: 159.0 × 17.0 × 6.0 (hull) A: 8/SS-N-14 (IV × 2, 8 missiles) — 2/SA-N-3 systems (II × 2, 44 Goblet missiles) -4/57-mm DP (II \times 2) -4/30-mm gatling AA (I \times 4) -2/RBU-6000 ASW RL (XII × 2) -2/RBU-1000 ASW RL (VI × 2) -10/533-mm TT (V × 2) - 1/Hormone-A helicopter

Electron Equipt: Radar: 1/Don-2, 2/Don-Kay, 1/Top Sail, 1/Head Net-C, 2/Head Lights, 2/Muff Cob, 2/Bass Tilt Sonar: 1/MF hull-mounted

EW: 8/Side Globe, 1/Bell Clout, 2/Bell Slam, 2/Bell Tap, 2/chaff RL (II × 2)

IFF: 1/High Pole-B, 1/High Pole-A (interrogation by search radars)

M: 2 sets GT: 2 props; 100,000 hp Boilers: 4, turbo-pressurized Fuel: 1,100 tons Range: 2,400/32; 10,500/14 Man: 380 tot.

Remarks: Soviet type designation: BPK-Bol'shoy Protivolodochnyy Korabl' (Large Antisubmarine Ship). The first four units do not have Bass Tilt, and must control their 30-mm AA with lead-computing optical directors only. Kronshtadt has earlier versions of the Head Lights control radar for SA-N-3 and SS-N-14. The three final units have larger forward superstructure, the area between the tower foremast and the bridge being filled in by a two-level deckhouse. Admiral Makarov has prototype solidstores equipment to port and prototype underway refueling equipment to starboard. SA-N-3 and SS-N-14 can also be used against surface targets. Have fin stabilizers. The helicopter hangar is one deck lower than the flight deck and is reached by means of an inclined elevator, as on the Kara class.

| 4 Kresta-I class | Bldr: Zhdanov SY, Leningrad |
|------------------|-----------------------------|
| 4 MICSIA-I CIASS | Diar. Zhadhov Di, Dennigrad |

| | L | In serv. | | L | In serv. |
|-----------------|-------|----------|---------------------|------|----------|
| Admiral Zozulya | 10-65 | 3-67 | VITSE ADMIRAL DROZD | 1-67 | 8-68 |
| VLADIVOSTOK | 8-66 | 1-68 | SEVASTOPOL | 6-67 | 7-69 |



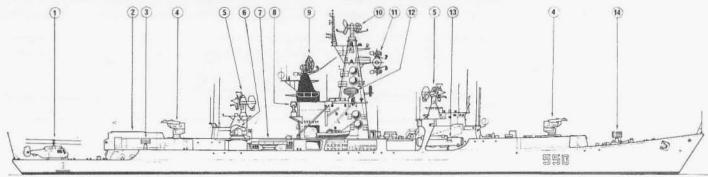
Vitse-Admiral Drozd — detail of enlarged superstructure 23 Flot., French Navy, 2-85

D: 6,200 tons (7,600 fl) S: 34 kts Dim: 155.5 × 17.0 × 6.0 (hull) A: 4/SS-N-3B (II × 2) - 2/SA-N-1 systems (II × 2, 44 Goa missiles) - 4/57-mm DP (II \times 2) -2/RBU-6000 ASW RL (XI \times 2) -2/RBU-1000 ASW RL (VI \times 2) -10/533-mm TT (V \times 2) -1/Hormone-B helicopter - Vitse Admiral Drozd: also 4/30-mm gatling AA (I × 4)



Vitse-Admiral Drozd — with gatling AA guns, Bass Tilt fire-control radars, and enlarged superstructure

1976



1. Hormone-B helicopter 2. helicopter hangar 3. RBU-1000 ASW RL 4. twin SA-N-1 launcher 5. Peel Group radar director for SA-N-1 6. twin 57-mm DP 7. quintuple 533-mm TT 8. Muff Cob radar director for 57-mm DP 9. Big Net early-warning radar 10. Head Net-C radar 11. Scoop Pair radar for SS-N-3B 12. Plinth Net 13. twin SS-N-3B launcher 14. RBU-6000 ASW RL H. Simoni Note: Drawing applies to Admiral Zozulya and Vladivostok.



Admiral Zozulya—with 2 Palm Frond, 1 Don-Kay navigational radars

U.S. Navy, 1977

Electron Equipt: Radar: 2/Don-2 or 1/Don-2 and 1/Don-Kay (except Adm.

Zozulya: 2/Palm Frond, 1/Don Kay), 1/Big Net,
1/Head Net-C, 2/Plinth Net, 1/Scoop Pair, 2/Peel
Group, 2/Muff Cob — Vitse Admiral Drozd: 2/Bass Tilt
also

Sonar: 1/MF, hull-mounted EW: 8/Side Globe, 1/Bell Clout, 2/Bell Slam, 2/Bell Tap, 2/Bell . . . , 2/chaff RL (II × 2)

IFF: 2/High Pole-B or Salt Pot transponders

M: 2 sets GT; 2 props; 100,000 hp Boilers: 4, turbo-pressurized

Fuel: 1,150 tons Range: 1,600/34; 7,000/14 Man: 380 tot.

Remarks: Soviet type designation: RKR — Raketnyy Kreyser (Missile Cruiser). Based on the Kynda class, but has a better-balanced mixture of weapons. The surface-to-surface launchers, fitted on each side of the superstructure, forward under the bridge wings, are elevated to fire, but cannot be trained. No SS-N-3 missile reloads. Installation of gatling guns abaft the Shaddock launchers and construction of a new deckhouse between the gatling guns altered the silhouette of the Vitse Admiral Drozd in 1976 (see photos). Sevastopol received the new deckhouse, but not the gatling guns or radar, in 1980.

• 4 Kynda class

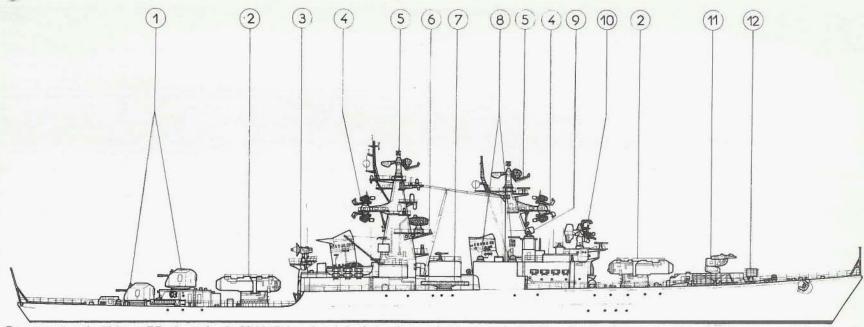
GROZNYY

Bldr: Zhdanov SY, Leningrad

Laid down L In serv. 6-59 4-61 6-62 Admiral Fokin 8-60 5-62 8-63 Admiral Golovko 12-60 1962 7-64 Varyag 9-61 6-63 2-65

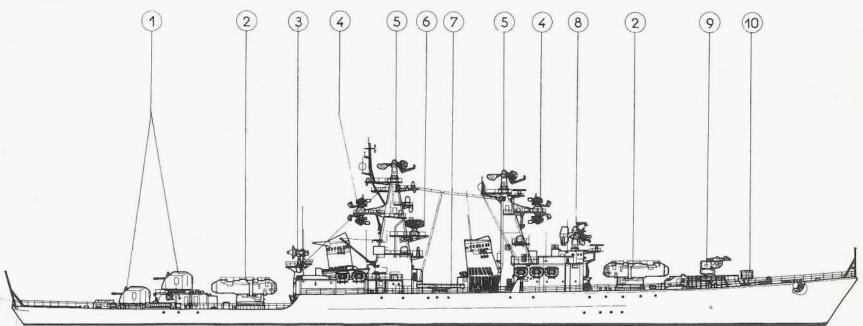


Groznyy — modernized like Varyag, but retaining 2 Head Net A! Has 45-mm saluting cannon mounted atop deckhouse amidships U.S. Navy, 2-83



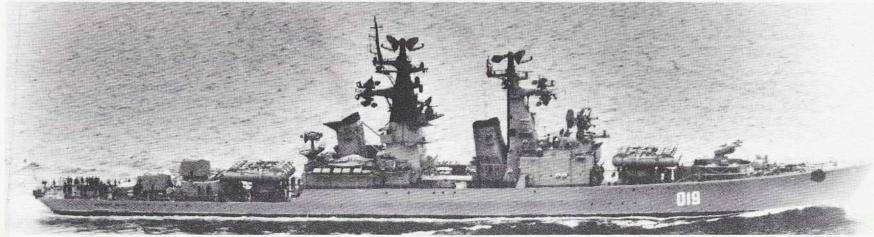
Groznyy 1. twin 76.2-mm DP 2. quadruple SS-N-3B launcher (reloads in adjacent deckhouses) 3. Owl Screech radar director for 76.2-mm DP 4. Scoop Pair radars for SS-N-3B 5. Head Net-A air-search radars 6. Plinth Net antennas 7. triple 533-mm TT 8. 30-mm gatling AA 9. Bass Tilt radar directors for 30-mm AA 10. Peel Group radar director for SA-N-1 11. twin SA-N-1 SAM launcher 12. RBU-6000 ASW RL

Note: Varyag similar, but with Head Net-C, no Plinth Net.



Admiral Golovko 1. twin 76.2-mm DP mounts 2. quadruple SS-N-3B launcher 3. Owl Screech radar director for 76.2-mm DP 4. Scoop Pair radars for SS-N-3B 5. Head Net-A air-search radar antennas 6. Plinth Net antennas 7. triple 533-mm TT 8. Peel Group radar director for SA-N-1 9. twin SA-N-1 launcher 10. RBU-6000 ASW RL

Note: Admiral Fokin similar, but Head Net-C on after mast.



Admiral Fokin - with 1 Head Net-A, 1 Head Net-C, 2 Plinth Net



Varyag—as modernized, with 4 gatling AA guns and 2 Bass Tilt added, 2 Head Net-C substituted for Head Net-A, and superstructure added between the torpedo-tube mounts; still without Plinth net



Admiral Golovko

French Navy, 1978

D: 4,400 tons (5,500 fl) S: 34 kts Dim: 141.7 (134.0 pp) × 15.8 × 5.3 (hull; 6.1 max.)

A: 8/SS-N-3 (IV \times 2, 16 missiles) — 1/SA-N-1 SAM system (II \times 1, 24 Goa missiles) — 4/76.2-mm DP (II \times 2) — 2/RBU-6000 ASW RL (XII \times 2) — 6/533-mm TT (III \times 2) — Varyag and Varyag also: 4/30-mm gatling AA

Electron Equipt: Radar: 2/Don-2 (Varyag: 3), 2/Head Net-A or -C, 2/Scoop Pair, 2/Plinth Net (not on Varyag), 1/Peel Group, 1/ Owl Screech — Varyag and Groznyy also: 2/Bass Tilt

Sonar: 1/HF, hull-mounted

EW: 2/Guard Dog, 1/Bell Clout, 1/Bell Slam, 1/Bell Tap, 4/Top Hat (varies)

IFF: 2/High Pole-B

M: 2 sets GT; 2 props; 100,000 hp Boilers: 4, turbopressurized Range: 2,000/32; 7,000/14 Man: 375 tot.

Remarks: Soviet type designation: RKR—Raketnyy Kreyser (Missile Cruiser). Eight Shaddock missiles are loaded in the trainable and elevatable quadruple tubes; reloading from the handling rooms requires some time. Admiral Fokin now has one Head Net-A, one Head Net-C, and two Plinth Net; Groznyy received two Plinth Net around 1973. Varyag received 2 Head Net-C, 2 Plinth Net, 2 Bass Tilt and 4/30-mm gatling AA in 1981, and Groznyy received the same treatment during 1980-82. All have a seldom-used helicopter pad on the stern. The function of Plinth Net is uncertain; it may be a data-link antenna for the SS-N-3B missiles, rather than a radar. Groznyy joined the Baltic Fleet in 1982. Admiral Golovko is in the Black Sea Fleet, and the other two are in the Pacific.

Note: The only Sverdlov-class guided-missile cruiser, Dzerzhinskiy, was towed home from the Mediterranean in 1979 and has not since deployed; presumed scrapped or hulked. The ship was the only unit to receive the unwieldy SA-N-2 SAM system.

COMMAND CRUISERS

• 2 Modified Sverdlov class

| | Bldr | Laid down | L | In serv. |
|------------------|----------------------|-----------|-------|----------|
| ADMIRAL SENYAVIN | Severodvinsk SY | 5-51 | 9-52 | 7-54 |
| ZHDANOV | Baltic SY, Leningrad | 10-49 | 12-50 | 1-52 |



Zhdanov - with triple 152-mm mount aft

French Navy, 5-83



Admiral Senyavin - no 152-mm mount aft

1979

For characteristics of hull and machinery, see Sverdlov-class light cruisers

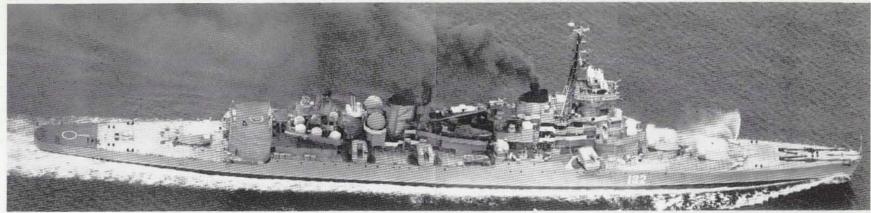
A: 6 (Admiral Senyavin) or 9/152-mm (III × 2, or 3)—12/100-mm DP (II × 6) — 1/SA-N-4 system (II × 1; 40 missiles)—16/37-mm AA—8 (Zhdanov) or 16/30-mm AK-230 AA (II × 4 or 8)

Electron Equipt: Radar: 2/Top Bow, 1/Top Trough, 2/Sun Visor, 6/Egg Cup, 1/Pop Group—Zhdanov: 2/Drum Tilt—Admiral Senyavin: 4/Drum Tilt

EW: None

Remarks: Soviet type designation: KU—Korabl' Upravleniy (Command Ship). Both completed modernization in 1972. Excellent long-range communications, including a Vee Cone HF antenna, which can be seen on the after tripod mast, and two Big Ball SATCOMM antenna radomes. The 30-mm guns are divided on each side of the forward stack and, on the Admiral Senyavin, on each side of the after deckhouse as well; her two after turrets have been replaced by a hangar and platform for one Hormone holicopter. Both ships have had their mine rails removed. Bag Ball satellite communications antennas were added to both in 1979-81. Zhdanov is in the Black Sea Fleet, Adm. Senyavin in the Pacific.

COMMAND CRUISERS (continued)



Zhdanov

U.S. Navy, 5-84

LIGHT CRUISERS

9 Sverdlov class
 Severodvinsk SY
 Bldrs: A: Baltic SY, Leningrad; B: Marti SY, Nikolayev; C:

| | Bldr | Laid down | L | In serv. | Fleet |
|--|------|-----------|-------|----------|-------|
| ADMIRAL LAZAREV | A | 5-50 | 10-51 | 11-52 | Pac. |
| Admiral Ushakov | A | 7-50 | 5-52 | 8-53 | Blk. |
| ALEXANDR NEVSKIY | В | 3-50 | 6-51 | 1952 | Nor. |
| ALEXANDR SUVOROV | В | 10-50 | 6-52 | 1953 | Pac. |
| DMITRIY POZHARSKIY | A | 9-51 | 4-53 | 1953 | Pac. |
| MIKHAIL KUTUZOV | В | 1950 | 5-54 | 1955 | Blk. |
| Murmansk | C | 1952 | 1955 | 1955 | Nor. |
| OKTYABRSKAYA REVOLUTSIYA (ex-Molotousk) | С | 1951 | 1954 | 9-54 | Bal. |
| SVERDLOV | A | 7-49 | 7-50 | 1951 | Bal. |



Alexandr Suvorov - modernized, Strut Curve atop foremast French Navy, 3-81



Dmitriy Pozharskiy — note enlarged deckhouse below pilothouse, Big Net air-search radar on after mast-supported deckhouse 1975

D: 12,900 tons (17,200 fl)
 S: 32 kts
 Dim: 210.0 (199.95 pp) × 21.6 × 7.2
 A: 12/152-mm (III × 4) — 12/100-mm DP (II × 6) — 32/37-mm AA (II × 16) — 140 mines — Oktyabrskaya Revolutsiya, Admiral Ushakov, Alexandr Suvorov: 16/30-mm AA (II × 8) also

Electron Equipt: Radar: 1/Neptune or Don-2, 1/Low Sieve or High Sieve,
1/Big Net or Top Trough, 1/Slim Net, 2/Top Bow,
2/Sun Visor, 8/Egg Cup—Knife Rest in some—ships
with 30-mm AA: 4/Drum Tilt also
EW: 2/Watch Dog—IFF: 1/High Pole

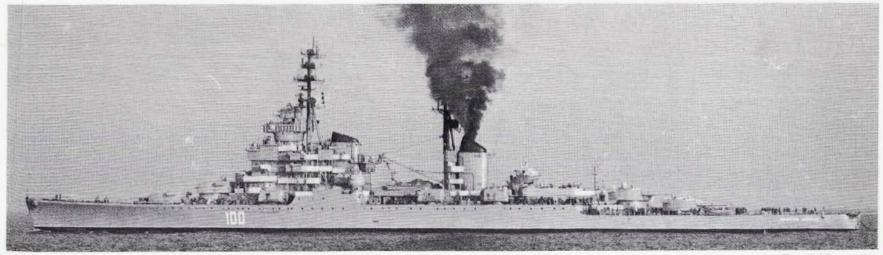
Armor: 152-mm turret; 76-100-mm; deck: 25-50 and 50-75-mm; 100-mm; gun shields: 25-mm

M: 2 sets GT; 2 props; 110,000 hp Boilers: 6/3-drum; 26 kg/cm², 350°C

Fuel: 3,800 tons Electric: 3,500 kw

Range: 2,400/32; 10,000/13.5 Man: 70 officers, 940 men

Remarks: Soviet type designation: KR—Kreyser (Cruiser). Based on the preceding Chapayev-class design, but with armor added. Twenty-four were planned, fourteen put in service between 1951 and 1956; others were laid down, but construction was suspended in 1956 and canceled in 1960. Slight differences in profile, the merging of the forward stack with the bridge structure being noticeable. Admiral Nakhimov was scrapped in 1961; Ordzhonikidze was transferred to Indonesia in 1962 and has since been scrapped. By 1961 Dzerhinskiy (discarded 1979) had been converted to a guided-missile cruiser: two others, Zhdanov and Admiral Senyavin, completed conversion to command cruisers in 1972. In 1977 Oktyabrskaya Revolutsiya completed overhaul,



Admiral Ushakov -- modernized version with 16/30-mm AA, 4 Drum Tilt, Knife Rest aft

LIGHT CRUISERS (continued)



Alexandr Nevskiy

U.S. Navy, 9-83

during which eight twin 30-mm AA and four Drum Tilt radars were added, the Egg Cup radars were removed from her 100-mm mounts, and her bridge was enlarged. Radar suits vary widely. In 1979 the Admiral Ushakov and Alexandr Suvorov appeared with similar alterations; all three ships have had four of their twin 37-mm AA removed. The Soviets evidently intend to continue this class in operation for some time; the ships provide excellent command facilities, and their powerful gunnery batteries give the U.S.S.R. the world's finest shore-bombardment capability. Sverdlov and Admiral Lazarev are in reserve, and several unmodernized units are in subsidiary services, such as cadet and gunnery training.

GUIDED-MISSILE DESTROYERS

◆ 7 (+1+...) Udaloy class

| The state of the s | Bldr | Laid down | L | in serv. |
|--|-----------------------|-----------|------|----------|
| UDALOY ("Daring") | Kaliningrad SY | 1978 | 1980 | 1981 |
| VITSE ADMIRAL KULAKOV | Zhdanov SY, Leningrad | 1978 | 1982 | 4-82 |
| MARSHAL VASIL'YEVSKIY | Kaliningrad SY | 1979 | 1981 | 1983 |
| Admiral Zakharov | Zhdanov SY, Leningrad | 1979 | 4-82 | 1984 |
| Admiral Spiridonov | Kaliningrad SY | 1981 | 1983 | 1984 |
| Admiral Tributs | Zhdanov SY, Leningrad | 1982 | 1984 | 1985 |
| Marshal Shaposhnikov | Zhdanov SY, Leningrad | 1983 | 1985 | 1985 |
| N | Kaliningrad SY | 1983 | 1986 | * * * |
| | | | | |



Vitse-Admiral Kulakov

French Navy, 5-84



Udaloy—detail showing 100-mm mounts at left, fixed-elevation SS-N-14 mounts (with 45-mm saluting cannon inboard), blank platform atop pilothouse for SA-N-9 SAM system radar director, and electronics arrays. Decks are bare metal in heavily trafficked areas, red-leaded elsewhere, as in most Soviet warships.

R. Neth. Navy, 6-84



Admiral Zakharov - on trials

M.O.D., Bonn, 12-83



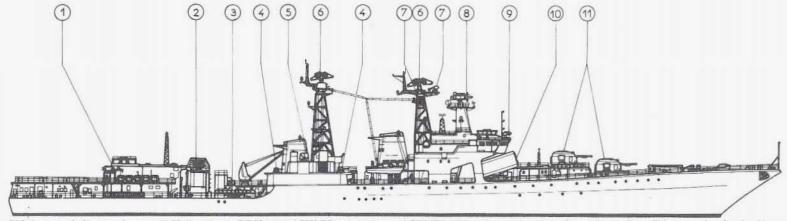
Admiral Zakharov—with Cross Sword SA-N-9 control radars added

M.O.D., Bonn, 1-85



Vitse-Admiral Kulakov

U.S. Navy, 1-84



Udaloy 1. helicopter hangar (2 Helix-A) 2. RBU-6000 ASW RL 3. 533-mm ASW TT (IV × 2) 4. 30-mm gatling AA 5. Bass Tilt control radar for 30-mm AA 6. Strut Pair air/surface-search radars 7. Palm Frond navigational/surface-search radars 8. Kite Screech radar gunfire-control director (100-mm guns) 9. Eye Bowl radar directors (SS-N-14 missiles) 10. SS-N-14 missiles (IV × 2) 11. 100-mm DP guns L. Gassier Note: The SA-N-9 launch groups are located, 2 between the RBU-6000 RL, 2 in the small deckhouse abaft the stores crane, and 4 within the forecastle, forward of the 100-mm gunmounts.



Marshal Vasil'yevskiy

M.O.D., Bonn, 9-83



Udaloy - with two Strut Pair radars at masthead

R. Neth. Navy, 6-84

D: 6,200-6,700 tons (8,200 fl) S: 34 kts

Dim: 162.0 (150.0 wl) × 19.3 (17.8 wl) × 6.2 (hull)
A: 8/SA-N-9 vertical SAM launchers (VIII × 8; see remarks) — 8/SS-N-14 (IV × 2) -2/100-mm DP -4/30-mm gatling AA (I × 4) -2/RBU-6000 ASW RL (XII × 2) -8/533-mm TT (IV × 2) - mines -2/Helix-A ASW helicopters Electron Equipt: Radar: 3/Palm Frond, Udaloy, V. Adm. Kulakov: 2/Strut Pair;

others 1/Top Plate/Top Mesh, 2/Eye Bowl, 1/Kite Screech, 2/Cross Sword (late units), 2/Bass Tilt, 1/Fly Screen helo landing control Sonar: 1/LF bow-mounted, 1/LF VDS

EW: 2/Bell Shroud, 2/Bell Squat, 2/chaff RL (II × 2)

TACAN: 2/Round House - IFF: 1/Salt Pot-B, 1/Salt Pot-C

M: 4 gas turbines; 2 CP props; 120,000 hp

Electric: . . . Range: 2,000/33; 5,000/20 Man: 300 tot.

Remarks: Formerly carried NATO-nickname BAL-COM-3. Soviet type designation BPK—Bol'shoy Protivolodochniy Korabl' (Large Antisubmarine Ship), as the design is obviously primarily intended for ASW. The design is analogous in size and capability to the U.S. Spruance class. Provision was made for installation of the SA-N-9 vertically launched SAM system; there are four 2-meter-diameter cover plates on the raised portion of the forecastle, two more disposed athwartships in the small deckhouse between the torpedo tubes, and two arranged fore and aft in the deckhouse between the RBU-6000 ASW RL mounts. Each cylinder can hold perhaps 8 missiles, for a total of 64. There are empty director platforms atop the hangar and atop the

bridge. Admiral Zakharov was the first ship to actually have the operational system (a probable short-range successor to SA-N-4) installed, with two multi-antennaequipped radar directors mounted in mid-1984. This is the first BPK design to carry two ASW helicopters. The two hangars are side by side and use inclined elevator ramps to raise the aircraft to the flight deck; the hangar roofs slide forward in two segmented sections to clear the rotors. From the third unit on, the helicopter deck is wider, extending to the sides of the ship. Two Round House TACAN radomes are mounted on yards on the after mast, while the Fly Screen microwave landing-control radar is beside the starboard hangar. The ECM/ESM suit is incomplete, with several empty platforms on the after mast. The sonar suit duplicates that of the nuclear-powered cruiser Kirov. Marshall Vasil'yevskiy begins trials 7-83 and Admiral Zakharov in 9-83; both have a Top Plate/Top Mesh antenna atop the after mast, with the forward position empty; the early ships lack a height-finding capability. The two twin-barreled chaff RL are located near the bow. Adm. Spiridonov to Pacific, 12-85.

| ♦ 5 (+1+) Sovremennyy cla | ss Bldr: | Bldr: Zhdanov SY, Leningrad | | |
|---------------------------|-----------|-----------------------------|----------|--|
| | Laid down | L | In serv. | |

| | Laid down | 1.4 | in serv. |
|---------------------------------|-----------|-------|----------|
| Sovremennyy ("Modern") | 1976 | 11-78 | 1981 |
| OTCHAYANNYY ("Merciless") | 1977 | 8-80 | 1982 |
| OTLICHNYY ("Perfect") | 1978 | 1981 | 1983 |
| OSMOTRITEL'NYY ("Circumspect") | 1979 | 1982 | 1984 |
| Bezuprechnyy ("Irreproachable") | 1980 | 1983 | 7-85 |
| N | 1981 | 1984 | 1986 |
| | | | |



Osmotritel'nyy-with unique Top Steer/Top Plate radar

M.O.D., Bonn, 7-84



Otchayannyy

U.S. Navy, 1-85

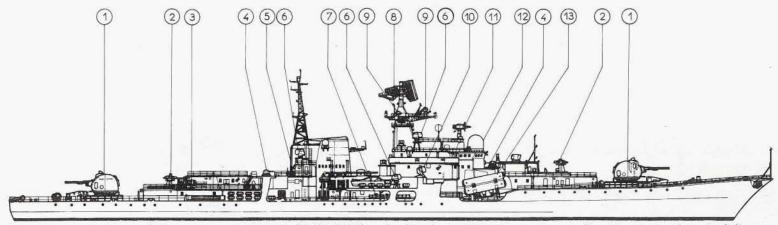


Sovremennyy—with hangar retracted. Note rope nets on helo deck as a primitive landing restraint



Otchayannyy - hangar extended. Note chaff rocket RL at extreme stern, flanking the mine rails.

U.S. Navy, 12-84



Sovremennyy 1. 130-mm dual-purpose guns (II \times 2) 2. SA-N-7 SAM launcher (I \times 2) 3. RBU-1000 4. 30-mm gatling AA guns 5. telescoping helicopter hangar (shown in retracted position) 6. Front Dome radar directors for the SA-N-7 system 7. 533-mm TT (II \times 2) 8. Top Steer 3-D air-search radar 9. Palm Frond navigational/surface-search radars 10. Bass Tilt radar directors for the 30-mm gatling AA 11. Kite Screech radar director for the 130-mm guns 12. Band Stand radome (SS-N-22 SSM-associated) 13. SS-N-22 SSM (IV \times 2) L. Gassier

D: 6,300 tons (7,900 fl) S: 34 kts

Dim: 156.0 (145.0 wl) × 17.0 (16.5 wl) × 6.1 (hull)

A: 8/SS-N-22 SSM — 2/SA-N-7 SAM systems (I \times 2, 40 missiles) — 4/130-mm DP (II \times 2) — 4/30-mm gatling AA (I \times 4) — 4/533-mm TT (II \times 2) — 2/RBU-1000 ASW RL (VI \times 2) — mines — 1/Hormone-B helicopter

Electron Equipt: Radar: 3/Palm Frond, 1/Top Steer (Osmotritel'nyy: Top Steer/Top Plate combined), 6/Front Dome, 2/Bass Tilt, 1/Kite Screech, 1/Band Stand

Sonar: 1/MF hull-mounted — Optronic: 1/Squeeze Box EW: 2/Bell Shroud, 2/Bell Squat, 4/. . . , 2/chaff RL (II × 2)

M: 2 sets GT; 2/4-bladed props; 100,000 hp Boilers: 4, turbo-pressurized, 500°C Range: 2,400/32; 10,500/14 Man: 380 tot.

Remarks: Design derived from the Kresta-I and -II series built at the same shipyard; uses same hull form and propulsion. Formerly called the "BAL-COM-2" class by NATO. The class is primarily intended for surface warfare tasks, including anti-ship,

shore bombardment, and anti-air defense; the ASW capability is primarily for self-defense. The SS-N-22 anti-ship missile system is probably capable of ranges of not more than 120 nautical miles, as there are no satellite receiving radomes of the Punch Bowl type; the Hormone-B helicopter can provide targeting data for the missiles, and the ships also have the large Band Stand radome associated with missile targeting for the SS-N-9 in the Nanuchka class. There are also two small spherical radomes on the sides of the stack that might be missile-associated. The chaff launchers are at the extreme stern. The 130-mm guns are of a new, fully automatic, water-cooled model, capable of AA or surface fire. The helicopter hangar is partially telescoping, extending aft from the stack structure, and the helicopter facilities are less elaborate than in other contemporary Soviet classes.

 1 Kashin, converted for missile trials serv. 1964) Bldr: Zhdanov SY, Leningrad (In

PROVORNYY ("Ferocious")



Provornyy - showing empty SA-N-7 positions forward



Provornyy - SA-N-7 launcher aft, swathed in canvas

U.S. Navy, 9-81

D: 3,750 tons (4,750 ft) S: 38 kts Dim: 144.0 × 15.8 × 4.8 (hull)
A: 1/SA-N-7 SAM syst. (I × 1, 20 missiles) — 4/76.2-mm DP (II × 2) — 5/533-mm TT (V × 1) — 2/RBU-6000 (XII × 2) — 2/RBU-1000 (VI × 2) — mines
Electron Equipt: Radar: 1/Don-2, 2/Don-Kay, 1/Top Steer, 1/Head Net-C, 2/Owl Screech, 8/Front Dome

Sonar: 1/MF, hull-mounted EW: no intercept arrays, 4/chaff RL (XVI × 4)

M: 4 gas turbines; 2 props; 96,000 hp Range: 1,500/35; 4,000/20 Man: 300 tot.

Remarks: Converted during the mid-1970s at a Black Sea shippard as trials ship for the SA-N-7 SAM system. Both SA-N-1 SAM systems were removed and the superstructure reconfigured as on the Modified Kashin class. An SA-N-7 single-armed launcher was emplaced aft, while provision was made for two more to be added forward. No EW equipment (other than chaff launchers) is installed, but provision has been made for adding 2 Bell Shroud and 2 Bell Squat. With eight SAM directors, the ship has an unusual antiaircraft capability.

• 6 Modified Kashin class

| | Bldr | In serv. | Conv. |
|-----------------------------|-----------------------|----------|-------|
| OGNEVOY ("Curtain of Fire") | Zhdanov SY, Leningrad | 8-64 | 2-73 |
| SLAVNYY ("Glorious") | Zhdanov SY, Leningrad | 6-66 | 9-75 |
| STROYNYY ("Harmonious") | 61 Kommuna, Nikolayev | 1966 | 1980 |
| SMYSHLENNYY ("Clever") | 61 Kommuna, Nikolayev | 1968 | 1974 |
| SMEL'YY ("Daring") | 61 Kommuna, Nikolayev | 1970 | 1974 |
| SDERZHANNYY ("Cautious") | 61 Kommuna, Nikolayev | 1973 | |



Stroynyy

PatRon 11, U.S. Navy, 9-83



Sderzhannyy

U.S. Navy, 7-83



Ognevoy

French Navy, 1984



Smel'yy

L. & L. Van Ginderen, 1981

D: 3,950 tons (4,950 fl) S: 35 kts Dim: 146.0 × 15.8 × 4.8 (hull)

A: 4/SS-N-2C (I × 4) — 2/SA-N-1 SAM syst. (II × 2, 36 Goa missiles) — 4/76.2-mm DP (II × 2) — 4/30-mm gatling AA (I × 4) — 5/533-mm TT (V × I) — 2/RBU-6000 ASW RL (XII × 2)

Electron Equipt: Radar: 2/Don-Kay, 1/Head Net-C, 1/Big Net, 2/Peel Group, 2/Owl Screech, 2/Bass Tilt

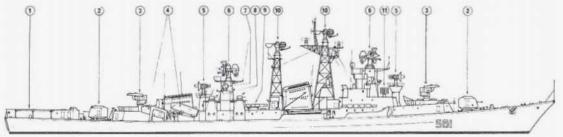
Sonar: 1/MF, hull-mounted, 1/MF VDS

EW: 2/Bell Squat, 2/Bell Shroud, 4/chaff RL (XVI × 4)

IFF: 1/High Pole-B

M: 4 gas turbines, 2 props; 96,000 hp Range: 1,500/35; 4,000/20

Remarks: Soviet type designation: BPK—Bol'shoy Protivolodochniy Korabl' (Large Antisubmarine Ship), having briefly been listed as "Large Missile Ships." Conversions completed from 1973 onward, with Sderzhannyy having probably been built to



Ognevoy 1. VDS, beneath helo deck 2. twin 76.2-mm DP 3. twin SA-N-1 launcher 4. SS-N-2C 5. Owl Screech radar director for 76.2-mm DP 6. Peel Group radar director for SA-N-1 7. Bass Tilt radar director for 30-mm AA 8. 30-mm gatling AA 9. quintuple 533-mm TT 10. See note 11. RBU-1000 ASW RL Note: All now have Head Net-C atop foremast and Big Net atop mainmast.

the new configuration. Hull lengthened by 2 meters, helicopter platform raised above new VDS installation, gatling guns added in place of 2 RBU-1000, new EW gear (not yet fully fitted in all) and radars; *Ognevoy*, the first converted, initially retained original air-search radars, but now has the standard fit.

♦ 12 Kashin class

Bldrs: Obraztsovyy, Odarennyy, Steregushchiy: Zhdanov, Leningrad; others: 61 Kommuna SY, Nikolayev

| | In serv. | | In serv. |
|-------------------------------|----------|-----------------------------|----------|
| Komsomolets Ukrainyy | 2-62 | RESHITELNYY ("Decisive") | 1-68 |
| SOOBRAZITEL'NYY ("Bright") | 9-63 | Strogiy ("Severe") | 8-68 |
| Obraztsovyy ("Exemplary") | 7-65 | SMETLIVYY ("Intelligent") | 9-69 |
| ODARENNYY ("Gifted") | 9-65 | Krasnyy Krym ("Red Crimea") | 9-70 |
| Steregushchiy ("Protective") | 10-66 | Sposobnyy ("Capable") | 8-71 |
| Krasnyy Kavkaz ("Red Kavkaz") | 1967 | Skoryy ("Swift") | 8-72 |



Komsomolets Ukrainyy-2 Head Net-A

U.S. Navy, 6-83



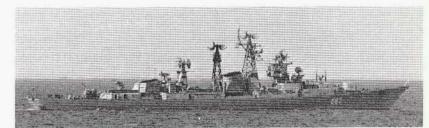
Krasnyy Krym - Big Net, Head Net-C

U.S. Navy, 10-83

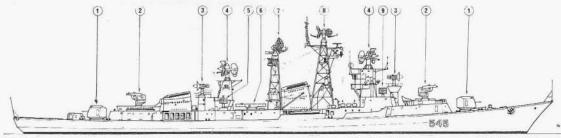


Obraztsovyy -- with unique extra EW suite, 2 Head Net-A

Skyfotos, 6-84



Odarennyy—a Pacific Fleet Kashin, with 2 Head Net-C, 3 Don-2 PH2 P. Soutar, U.S.N., 9-83



Kashin class 1. twin 76.2-mm DP 2. twin SA-N-1 launcher 3. Owl Screech radar director for 76.2-mm DP 4. Peel Group radar director for SA-N-1 5. RBU-1000 ASW RL 6. quintuple 533-mm TT 7. Big Net radar 8. Head Net-C radar 9. RBU-6000 ASW RL H. Simoni



Sposobnyy - with two Don-Kay navigational radars

Lt. McDowell/LCDR Benedict, VF-111, U.S.N., 1983



Smetlivyy -- with Head Net-C atop foremast, Big Net atop mainmast, and two Palm Frond nav. radars

French Navy, 9-82

D: 3,750 tons (4,750 ft) S: 38 kts Dim: 144.0 \times 15.8 \times 4.8 (hull) A: 2/SA-N-1 SAM syst. (II \times 2, 36 Goa missiles) —4/76.2-mm DP (II \times 2) —2/RBU-6000 ASW RL (XII \times 2) —2/RBU-1000 ASW RL (VI \times 2) —5/533-mm TT (V \times I) —mines

Electron Equipt: Radar: 2-3/Don-2 or 2/Don-Kay, or 2/Palm Frond; 2/Head Net-A or 1/Head Net-C and 1/Big Net, (Odarennyy, Soobrazitel'nny: 2/Head Net-C), 2/Peel Group, 2/Owl Screech—IFF: 2/High Pole-B or Salt Pot

Sonar: 1/MF, hull-mounted—EW: 2/Watch Dog M: 4 gas turbines; 2 props; 96,000 hp Range: 1,500/36; 4,000/20 Man: 280 tot.

Remarks: Soviet type designation: Bol'shoy Protivolodochnyy Korabl' (Large Anti-submarine Ship). One of this class, the Otvazhnyy, was sunk 31-8-74 following an explosion: six others have been converted to Modified Kashin configuration and Provornyy was converted as SA-N-7 SAM trials ship. All have a helicopter pad on the fantail. The earlier ships carried 2/Head Net-A air-search radars, replaced by two Head Net-C in two ships. Obraztsovyy and Soobrazitel'nyy have additional Guard Dog EW radomes. The majority are in the Black Sea Fleet.

• 8 Kanin class

| | Bldr | In serv |
|-----------------------------|--------------------------|---------|
| GREMYASHCHIY ("Thunderous") | Zhdanov SY, Leningrad | 1959 |
| ZHGUCHIY ("Ardent") | Zhdanov SY, Leningrad | 1960 |
| GORDYY ("Proud") | 61 Kommuna SY, Nikolayev | 1960 |
| Upornyy ("Persistent") | Komsomolsk SY | 1960 |
| DERZKIY ("Audacious") | Zhdanov SY, Leningrad | 1961 |
| ZORKIY ("Vigilant") | Zhdanov SY, Leningrad | 1961 |
| Boykiy ("Valiant") | 61 Kommuna SY, Nikolayev | 1961 |
| GNEVNYY ("Angry") | 61 Kommuna SY, Nikolayev | 1961 |



Gremyashchiy

U.S. Navy, 3-82



Zhguchiy

French Navy, 1977

D: 3,700 tons (4,750 fl)
 S: 34 kts
 Dim: 139.0 × 15.0 × 5.0 (hull)
 A: 1/SA-N-1 system (II × 1, 16 Goa missiles) — 8/57-mm AA (IV × 2) — 8/30-mm AA (II × 4) — 3/RBU-6000 ASW RL (XII × 3) — 10/533-mm TT (V × 2)

Electron Equipt: Radar: 2/Don-Kay, 1/Head Net-C, 1/Peel Group, 1/Hawk
Screech, 2/Drum Tilt—IFF: 1/High Pole-B
Sonar: 1/MF, hull-mounted—EW: 4/Top Hat, 2/Bell-series

M: 2 sets GT: 2 props: 72 000 hp. Roilers: 4: 64 kg/cm² 510°C

M: 2 sets GT; 2 props; 72,000 hp Boilers: 4; 64 kg/cm², 510°C Range: 1,000/30; 4,500/18 Man: 300 tot.

Remarks: Soviet type designation: BPK—Bol'shoy Protivolodochnyy Korabl' (Large Antisubmarine Ship). Helicopter platform, but no hangar. Converted from Krupnyy class SS-N-1-equipped "Missile Ships" at Zhdanov SY, Leningrad, except for Gnevnyy and Gordyy, at Vladivostok in the Far East, 1968-77; bows lengthened to incorporate a bow-mounted sonar and superstructures substantially reconfigured.

3 Modified Kildin class

| | Bldr | In serv. |
|---------------------------|--------------------------|----------|
| Bedovyy ("Daredevilish") | 61 Kommuna SY, Nikolayev | 1950 |
| Neulovimyy ("Elusive") | Zhdanov SY, Leningrad | 1958 |
| Prozorlivyy ("Sagacious") | Zhdanov SY, Leningrad | 1959 |



Bedovyy-with Strut Pair radar, large "Kotlin" stacks

U.S. Navy, 8-84



Neulovimyy-small stacks, Head Net-C

U.S. Navy, 1985



Prozorlivyy - small stacks, Head Net-C

D: 2,800 tons (3,700 fl)
 S: 36 kts
 Dim: 126.5 × 13.0 × 4.7 (5.7 sonar)
 A: 4/SS-N-2C (I × 4) — 4/76.2-mm DP (II × 2) — 16/57-mm AA (IV × 4) [except Bedovyy: 16/45-mm AA (IV × 4)] — 2/RBU-2500 ASW RL (XVI × 2) — 4/533-mm TT (II × 2)

Electron Equipt: Radar: 1/Don-2, 1/Head Net-C (Bedovyy: Strut Pair), 1/Owl Screech, 2/Hawk Screech

Sonar: 1/HF, hull-mounted (Herkules or Pegas) EW: 2/Watch Dog — IFF: 1/High Pole-B or Salt Pot

M: 2 sets GT; 2 props; 72,000 hp Boilers: 4; 64 kg/cm², 510°C Electric: 1,400 kw Range: 1,000/32; 3,600/18; 4,700/11 Man: 300 tot.

Remarks: Soviet type designation: BRK—Bol'shoy Raketnyy Korabl' (Large Missile Ship). The Bedovyy has broader stacks than her sisters and has Strut Pair radar in place of Head Net-C. Conversions from Kildin configuration completed at Nikolayev, 1973-75. Prozorlivyy, launched 30-7-57, is in the Baltic Fleet; the others are in the Black Sea Fleet.

• 1 Kildin class

Neuderzhimyy ("Irrepressible") Bldr Komsomol'sk SY, Komsomolsk-na-Amur In serv. 1959



Neuderzhimyy

U.S. Navy, 6-73

D: 2,600 tons (3,500 fl) S: 36 kts Dim: $126.5 \times 13.0 \times 4.6$ (5.6 sonar) A: 1/SS-N-1 (I \times 1, 6 Scrubber missiles) — 16/57-mm AA (IV \times 4) — 2/RBU-2500 ASW RL (XVI \times 2) — 4/533-mm TT (II \times 2)

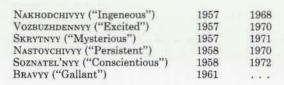
Electron Equipt: Radar: 1/Slim Net, 1/Flat Spin, 1/Top Bow, 2/Hawk Screech, 1/Knife Rest—IFF: 1/High Pole, 2/Square Head Sonar: 1/HF, hull-mounted—EW: 2/Watch Dog

M: 2 sets GT; 2 props; 72,000 hp Boilers: 4; 64 kg/cm², 510°C Electric: 1,400 kw Range: 1,000/34; 3,600/18; 4,700/11 Man: 285 tot.

Remarks: Soviet type designation: BRK—Bol'shoy Raketnyy Korabl' (Large Missile Ship). The SS-N-1 launcher and reload hangar are aft. Design modified from that of the Kotlin class. Unlikely to be converted, because of age. In the Pacific Fleet, probably in reserve.

8 SAM Kotlin class Bldr: Zhdanov SY, Leningrad; (except Bravyy: 61 Kommuna SY, Nikolayev; Vozbuzhdennyy, Komsomol'sk SY)

| | In serv. | Conv. |
|------------------------------|----------|-------|
| Skromnyy ("Modest") | 1955 | 1969 |
| NESOKRUSHIMYY ("Invincible") | 1956 | 1967 |





Bravyy—conversion prototype, with 12/45-mm AA, Head Net-A, RBU-2500 U.S. Navy, 2-75



Nakhodchivyy-no 30-mm AA

U.S. Navy, 5-83

D: 2,700 tons (3,600 fl) S: 36 kts Dim: $126.5 \times 13.0 \times 4.6$ (avg.) A: Bravyy: 1/SA-N-1 system (II \times 1) -2/130-mm DP (II \times 1) -12/45-mm AA (IV \times 3) -5/533-mm TT (V \times 1) -2/RBU-2500 ASW RL (XVI \times 2) Others: 1/SA-N-1 system (II \times 1) -2/130-mm DP (II \times 1) -4/45-mm AA (IV \times 1) -8/30-mm AA (II \times 4; not in 3 units) -5/533-mm TT (V \times 1) -2/RBU-6000 ASW RL (XII \times 2) (Shromnyy has RBU-2500, see Remarks)

Electron Equipt: Radar: 1 or 2/Don-2, 1/Head Net-C, 1/Peel Group, 1/Sun Visor, 1/Hawk Screech, 1/Egg Cup, 2/Drum Tilt (not

Sonar: 1/HF (Herkules or Pegas) EW: 2/Watch Dog — IFF: 1/High Pole-B M: 2 sets GT; 2 props; 72,000 hp Boilers: 4; 64 kg/cm², 510°C Electric: 1,400 kw Range: 1,000/34; 3,600/18; 4,700/11 Man: 300 tot.

Remarks: Soviet type designation: EM—Eskhadrennyy Minonosets (Destroyer). Nesokrushimyy, Skrytnyy, Soznatel'nyy, and Vozbuzhdennyy have eight 30-mm AA (II × 4) in addition to the above, with two Drum Tilt fire-control radars. Nastoychivyy has no Egg Cup radar. Bravyy has Head Net-A, two extra quadruple 45-mm AA mounts and, as does the Skromnyy, RBU-2500 vice RBU-6000. Bravyy, which was completed as the SA-N-1 trials ship, was further modified in the mid-1960s with 2 additional 45-mm AA mounts and TT added. Sister Spravedlivyy was transferred to Poland in 1970. The SA-N-1 system has 16 Goa missiles.





Soznatel'nyy

French Navy, 1-85

DESTROYERS

17 Kotlin and Modified Kotlin classes
 B: 61 Kommuna SY, Nikolayev; C: Komsomol'sk-na-Amur

11 Modified Kotlin Class:

| | Bldr | In serv. |
|--|------|----------|
| Svedushchiy ("Experienced") | A | 1956 |
| Moskovskiy Komsomolets (ex-Smyshlennyy) | A | 1956 |
| Burlivyy ("Turbulent") | В | 1956 |
| Byvalyy ("Veteran") | В | 1956 |
| VDOKHNOVENNYY ("Inspired") | C | 1956 |
| Vyzyvayushchiy ("Defiant") | C | 1956 |
| BLESTYASHCHIY ("Magnificent") | В | 1957 |
| Blagorodnyy ("Noble") | В | 1957 |
| PLAMENNYY ("Fiery") | В | 1958 |
| Naporistyy ("Assertive") | В | 1958 |
| Vyderzhannyy ("Steadfast") | C | 1958 |
| 6 Kotlin Class: | | |
| Speshnyy ("Urgent") | A | 1955 |
| Spokoynyy ("Tranquil") | A | 1956 |
| SVETLYY ("Luminous") | A | 1957 |
| Veskiy ("Imposing") | C | 1957 |
| VLIYATELNYY ("Influential") | C | 1958 |
| Dalnyvostochnyy Komsomolets (ex-Vozmushchvennyv) | C | 1958 |



Moskovskiy Komsomolets—Modified Kotlin with RBU-6000, towed array, no RBU-600 8-80



. . . Mod. Kotlin with only 4/25-mm AA (II \times 2)

U.S. Navy, 6-82

D: 2,600 tons (3,500 fl) S: 36 kts Dim: $126.5 \times 13.0 \times 4.6$ (5.6 sonar) A: Kotlin: 4/130-mm DP (II \times 2) -16/45-mm AA (IV \times 4) -4/25-mm AA (II \times 2) -10/533-mm TT (V \times 2) -6/BMB-2 d.c. projectors -2/d.c. racks -70 mines Mod. Kotlin: 4/130-mm DP (II \times 2) -16/45-mm AA (IV \times 4) -8/25-mm AA

Mod. Kotlin: 4/130-mm DP (II × 2) -16/45-mm AA (IV × 4) -8/25-mm AA (II × 4) -5/533-mm TT (V × 1) -2/RBU-2500 ASW RL (XVI × 2) -2/RBU-600 ASW RL (VI × 2) -70 mines

Electron Equipt: Radar: 1/Neptune or 1 or 2/Don-2, 1/Slim Net, 1/Sun Visor, 2/Hawk Screech, 2/Egg Cup, 1/Post Lamp or Top Bow



Svetlyy-only Kotlin with a helo deck

1977



Vdokhnovennyy-Modified Kotlin with 8/25-mm (II × 4) abreast aft stack 4-79

Sonar: 1/HF (Herkules EW: 2/Watch Dog—IFF: 1/High Pole, 2/Square Head M: 2 sets GT; 2 props; 72,000 hp **Boilers:** 4; 64 kg/cm², 510°C **Electric:** 1,400 kw **Range:** 1,000/34; 3,600/18, 4,700/11 **Man:** 36 officers, 300 men

Remarks: Soviet type designation: EM—Eskhadrennyy Minonosets (Destroyer). Eleven were modified between 1960 and 1965, receiving two RBU-2500 forward and two RBU-600 in place of their depth-charge equipment, the after bank of five 533-mm TT being removed. Later, most of these ships got eight 25-mm AA (II × 4). The Moskovskiy Komsomolets got RBU-6000 forward, nothing aft; in 1978 she received a variable-depth sonar on her stern. Most of those that were not modified received four 25-mm AA (II × 2). Svetlyy has a helicopter platform in place of depth-charge gear and thus has no ASW armament. Helicopter decks were removed from the other two ships that had them. Many have had their Egg Cup radars removed. Only about 11 total of both types are active.

♦ 13 Skoryy and 4 Modified Skoryy classes (In serv. 1949-53) — in reserve

Bldrs: Molotovsk (now Severodvinsk) SY; Zhdanov SY, Leningrad; 61 Kommuna SY, Nikolayev; Komsomol'sk SY, Komsomol'sk-na-Amur



Buynyy - Skoryy class with seven 37-mm AA, no 25-mm AA

7-79



Modified Skoryy class

D: 2,600 tons (3,130 fl) S: 34 kts Dim: 121.2 (116.5 pp) × 12.0 × 4.5 (hull)

A: Standard: 4/130-mm DP (II × 2) −2/85-mm AA (II × 1) −7 or 8/37-mm AA (I × 7 or II × 4) −4 or 6/25-mm AA (II × 2 or 3 − not in 7/37-mm ships) − 10/533-mm TT (V × 2) −2/d.c. projectors −2/d.c. racks −50 mines Modified: 4/130-mm DP (II × 2) −5/57-mm AA (I × 5) −2/RBU-2500 ASW RL (XVI × 2) −5/533-mm TT (V × 1) −50 mines

Electron Equipt: Radar: Standard: 1/High Sieve, 1/Top Bow or Half Bow or Post Lamp, 1/Cross Bird, 1 or 2/Don-2
Modified: 1/Slim Net, 1/Top Bow, 1 or 2/Don-2, 2/Hawk Screech

DESTROYERS (continued)



Solidnyy-with 8/37-mm (II \times 4), 6/25-mm AA (II \times 3)

U.S. Navy, 10-80

Sonar: 1/HF (Tamir-5 Pegas) EW: 2 Watch Dog — IFF: 2/Square Head, 1/High Pole-A M: 2 sets GT; 2 props; 60,000 hp Boilers: 4; 27 kg/cm², 367°C Electric: 475 kw Fuel: 786 tons Range: 850/30; 3,000/18 Man: 18 officers, 200 men

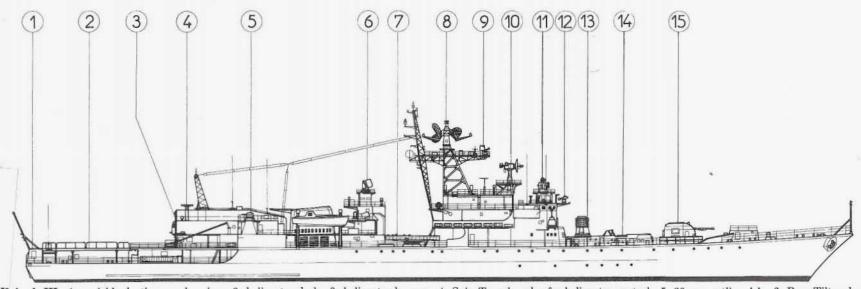
Remarks: Soviet type designation: EM — Eskhadrennyy Minonosets (Destroyer). Survivors of seventy-two built, derived from prewar Ognevoy design. Six early-construction units were modernized around 1960 to Modified Skoryy configuration, with improved AAW and ASW equipment and enhanced EW suits. Only those with eight

37-mm AA have been given two or three twin 25-mm AA. Several *Skoryy* class were transferred to Egypt, Poland, and Indonesia. Now of little value, and all believed to be in reserve, with a few periodically activated only for local training duties.

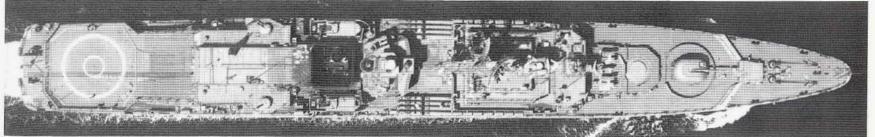
FRIGATES

♦ 2 (+ . . .) Krivak-III class Bldr: Kamysh Burun SY, Kerch'

Menzhinskiy (In serv. 8-84) Dzerzhinskiy (In serv. 8-85)



Krivak-III 1. variable-depth sonar housing 2. helicopter deck 3. helicopter hangar 4. Spin Trough radar for helicopter control 5. 30-mm gatling AA 6. Bass Tilt radar director for 30-mm AA 7. quadruple 533-mm TT 8. Head Net-C air-search radar 9. Don-Kay nav. radar 10. Kite Screech radar director for 100-mm gun 11. Pop Group track-while-scan radar for SA-N-4 12. Palm Frond nav. radar 13. RBU-6000 ASW RL 14. twin SA-N-4 launcher 15. 100-mm DP



Menzhinskiy



Dzerzhinskiy

JMSDF, 9-85



Menzhinskiy

U.S. Navy, 9-84

D: 3,900 tons (fl) S: 32 kts (30 sust.)

Dim: 123.5 (115.4 pp) \times 14.1 \times 4.5 (hull) A: 1/SA-N-4 syst. (II \times 1) — 1/100-mm automatic DP — 2/30-mm gatling AA $(I \times 2) - 2/RBU-6000$ ASW RL $(XII \times 2) - 8/533$ -mm TT - 1/Ka-27 Helix helicopter - mines

Electron Equipt: Radar: 1/Palm Frond, 1/Don-Kay, 1/Don-2, 1/Head Net-C, 1/Pop Group, 1/Kite Screech, 1/Bass Tilt

Sonar: MF hull-mounted, MF VDS EW: 2/Bell Shroud, 2/Bell Squat, 4/decoy RL (XVI × 4)

IFF: 1/Salt Pot transponder, 1/High Pole-B transponder

M: COGOG: 2 cruise gas turbines of 12,100 hp each/2 high-speed gas turbines of 24,300 hp each; 2 props; 48,600 hp max.

Range: 700/30; 3,900/20 Man: 200 tot.

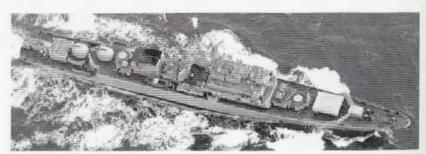
Remarks: Revised version of basic Krivak design for KGB Maritime Border Guard service. Typed PSKR—Pogranichnyy Storozhevoy Korabl' (Border Patrol Ship). Named for prominent KGB "heroes." Menzhinskiy deployed from the Black Sea 7-9-84, bound for the Pacific, and Dzerzhinskiy followed a year later. More probably are building, although the basic design is essentially nearly 20 years old.

The addition of a helicopter facility (with simple deck-transit system) and helicop-

ter weapons reload magazines cost two gunmounts and one SA-N-4 positions aft, while the Krivak-I/II SS-N-14 dual-purpose missile system was replaced by a 100-mm gun, more useful for the mission of these ships. Two 6-barreled gatling guns were added to improve close-in defense. Sensors are not the latest available.

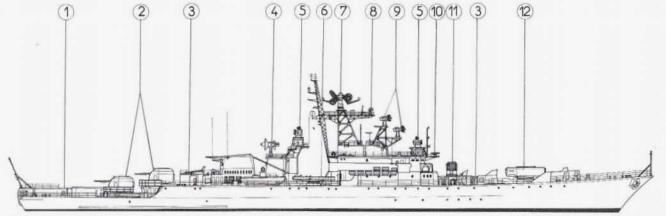
Bldr: Kaliningrad SY ♦ 11 Krivak-II class

| | In serv. | | In serv. |
|-----------------------------|----------|----------------------------|----------|
| Rezvyy ("Lively") | 1975 | Gromkiy ("Thunderous") | 1979 |
| Rezkiy ("Brusque") | 1976 | GORDELIVYY ("Trustworthy") | 1979 |
| RAZITEL'NYY ("Wrathful") | 1977 | R'yanyy ("Spirited") | 1980 |
| Grozyashchiy ("Dissuasive") | 1977 | REVNOSTNYY ("Roaring") | 1980 |
| NEUKROTIMYY ("Indomitable") | 1978 | Pytlivyy ("Curious") | 1982 |
| Bessmennyy ("Irremoveable") | 1978 | | |



Razitel'nyy

U.S. Navy, 12-84



Krivak-II 1. variable-depth sonar housing 2. single 100-mm DP mounts 3. twin SA-N-4 launcher 4. Kite Screech radar director for 100-mm guns 5. Pop Group track-while-scan radar director for SA-N-4 6. quadruple 533-mm TT 7. Head Net-C air-search radar 8. Don-Kay or Palm Frond nav. radar 9. Eye Bowl radar directors for SS-N-14 10. Spin Trough nav. radar 11. RBU-6000 ASW RL 12. quadruple SS-N-14 launcher L. Gassier, 1985



Razitel'nyy - Don-2 and Palm Frond navigational radars





Pytlivyy

French Navy, 4-84



Gromkiy

U.S. Navy, 10-83

D: 3,800 tons (fl) **S:** 32 kts (30 sust.) **Dim:** $123.5 \times 14.1 \times 4.6$ (hull) **A:** 4/SS-N-14 (IV \times 1) — 2/SA-N-4 systems (II \times 2, 40 missiles) — 2/100-mm DP (I \times 2) — 2/RBU-6000 ASW RL (XII \times 2) — 8/533-mm TT (IV \times 2) —

Electron Equipt: Radar: 1/Palm Frond or Don-Kay, 1/Spin Trough or Don-2, 1/Head Net-C, 2/Eye Bowl, 1/Kite Screech, 2 Pop Group

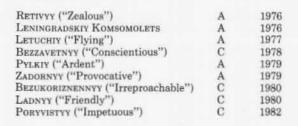
Sonar: 1/MF hull-mounted, 1/MF VDS EW: 2/Bell Shroud, 2/Bell Squat, 4/decoy RL (XVI \times 4) IFF: 1/High Pole-B or Salt Pot transponder

M: COGOG: 2 cruise gas turbines of 12,100 hp each and 2 high-speed gas turbines of 24,300 hp each; 2 props; 48,600 hp max.
Range: 700/30; 3,900/20 Man: 200 tot.

REMARKS: Soviet type designation: SKR—Storozhevoy Korabl' (Patrol Ship), formerly BPK—Large Antisubmarine Ship. The VDS housing at the stern is somewhat larger than on the Krivak-Is, but the principal difference is substitution of single 100-mm for twin 76.2-mm guns. The chaff/decoy rocket launchers were moved from the stern to the 01 level, abreast the aft SA-N-4 launcher. Revostnyy has four 4-tubed decoy RL mounted between the torpedo tubes, in addition to her normal chaff RL system.

21 Krivak-I class Bldrs: A: Zhdanov SY, Leningrad; B: Kaliningrad SY; C: Kamysh-Burun SY, Kerch'

| | Bldr | In serv. |
|----------------------------|------|----------|
| BDITEL'NYY ("Vigilant") | В | 1970 |
| Dostovnyy ("Dignified") | C | 1971 |
| Bodryy ("Brave") | В | 1971 |
| Svirepyy ("Ferocious") | В | 1971 |
| Sil'nyy ("Powerful") | В | 1972 |
| Doblestnyy ("Valorous") | C | 1972 |
| STOROZHEVOY ("Guarding") | В | 1973 |
| RAZUMNYY ("Sensible") | В | 1973 |
| RAZYASHCHIY ("Perceptive") | В | 1974 |
| DRUZHNYY ("Amicable") | A | 1975 |
| DEYATEL'NYY ("Active") | C | 1975 |
| ZHARKYY ("Passionate") | В | 1975 |





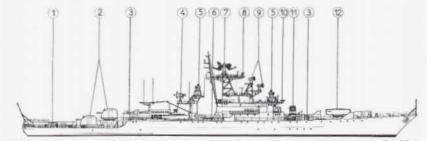
Bezzavetnyy-still without EW suite

French Navy, 1984



Sil'nyy-also without EW suite

French Navy, 8-84



Krivak-I 1. variable-depth sonar housing 2. twin 76.2-mm DP 3. twin SA-N-4 launcher 4. Owl Screech radar director for 76.2-mm DP 5. Pop Group track-while-scan radar directors for SA-N-4 6. quadruple 533-mm TT 7. Head Net-Cair-search radar 8. Don-Kay or Palm Frond nav. radar 9. Eye Bowl radar directors for SS-N-14 10. Spin Trough nav. radar 11. RBU-6000 ASW RL 12. quadruple SS-N-14 launcher L. Gassier



Bezukoriznennyy

U.S. Navy, 2-83



Pilkiy - note bow sonar dome, visible beneath the water's surface

U.S. Navy, 7-84



Razyashchiy

U.S. Navy, 9-83

D: 3,700 tons (fl) S: 32 kts (30 sust.) Dim: 123.5 × 14.1 × 4.6 (hull) A: 4/SS-N-14 (IV \times 1) -2/SA-N-4 systems (II \times 2, 40 missiles) -4/76.2-mm DP (II \times 2) -2/RBU-6000 ASW RL (XII \times 2) -8/533-mm TT (IV \times 3) -8/533-mm TT (IV \times 3) -8/533-mm TT (I

Electron Equipt: Radar: 1/Don-2 or Spin Trough, 1/Don-Kay or Palm Frond, 1/Head Net-C, 2/Eye Bowl, 1/Owl Screech, 2/Pop Group

Sonar: $1/M\bar{F}$ hull-mounted, $1/M\bar{F}$ VDS EW: 2/Bell Shroud, 2/Bell Squat, 4/chaff launchers (XVI × 4) IFF: High Pole-B or Salt Pot

M: CODOG: 2 cruise gas turbines of 12,100 hp each and 2 boost gas turbines of 24,300 hp each; 2 props; 48,600 hp max. Range: 700/30; 3,900/20 Man: 200 tot.

Remarks: Soviet type designation: SKR-Storozhevoy Korabl' (Patrol Ship). In 1978 Krivak-I and Krivak-II classes were rerated from BPK (Bol-shoy Protivolodochnyy Korabl'-large ASW ship) to SKR (Storozhevoy Korabl'-patrol ship), a demotion

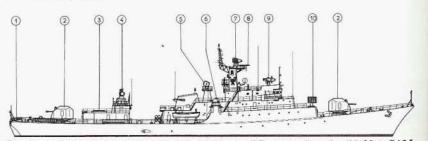


U.S. Navy, 1-85

prompted perhaps by their limited endurance at high speeds, speed, and size. Not all units have the EW gear. Bodryy has been equipped with ten 10-tubed chaff RL, replacing the original four 16-tubed.

• 1 Koni class Bldr: Zelenodolsk SY (In serv. circa 1978)

TIMOFEY UL'YANTSEV



Koni 1. depth-charge racks 2. twin 76.2-mm DP guns 3. twin SA-N-4 SAM launcher 4. Pop Group radar director for SA-N-4 5. Drum Tilt radar director for 30-mm AA 6. twin 30-mm AA 7. Strut Curve surface/air-search radar 8. Don-2 nav. radar 9. Hawk Screech radar director for 76.2-mm guns 10. RBU-6000 ASW RL Note: This drawing represents an early-contruction Koni with separate deckhouse L. Gassier aft; the Soviet Navy's unit should be very similar.

D: 1,900 tons (fl) **S:** 27 kts **Dim:** $95.0 \times 12.8 \times 4.2$ (5.4 max.)

A: 1/SA-N-4 SAM syst. (II × 1, 20 missiles) —4/76.2-mm DP (II × 2) —4/30-mm AK-230 AA —2/RBU-6000 ASW RL (XII × 2) —2/d.c. racks —20 mines Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Pop Group, 1/Hawk

Screech, 1/Drum Tilt Sonar: 1/MF hull-mounted

EW: 2/Watch Dog - IFF: 1/High Pole-B

M: CODAG: 1 gas turbine of 15,000 hp, 2 diesels of 7,500 hp; 3 props; 30,000 hp Range: 1,800/14 Man: 110 tot.

Remarks: One unit of this export SKR—Storozhevoy Korabl' (Patrol Ship) design, reportedly with the listed name, has been retained in the Black Sea Fleet for training foreign crews. Only about one Koni per year has been built—all for export—although the design would seem to have been a natural successor for the Riga class. Have a large teardrop-shaped sonar dome. The d.c. racks are bolted to the mine rails. Centerline shaft, powered by the diesel, has controllable-pitch prop. Fin stabilizers. Units have been exported to East Germany, Cuba, Algeria, and Yugoslavia; recent ships have had a continuous after deckhouse and 2 chaff RL (XVI × 2) added.

• 33 Grisha-III class

Bldr: Zelenodolsk SY, . . . (In serv. 1975- . . .)

KOMSOMOLETS GRUZIN ORLOVSKIY KOMSOMOLETS KOMSOMOLETS BASHKIRIY 30 others



Grisha-III class

PH1 F. Barbante, U.S.N., 9-83



Grisha-III class - Bass Tilt and deckhouse offset to port

7-79

A: 1/SA-N-4 syst. (II × 1, 20 missiles) — 2/57-mm DP (II × 1) — 1//30-mm gatling AA — 2/RBU-6000 ASW RL (XII × 2) — 4/533-mm TT (II × 2) — 2/d.c. racks (12 d.c.) or mines

Remarks: See Grisha-I entry for other data. Soviet type designation: MPK—Malyy Protivolodochnyy Korabl' (Small Antisubmarine Ship). Construction continues. Bass Tilt, which is atop a small deckhouse to port on the aft superstructure, has been substituted for Muff Cob radar fire control, while a gatling gun has been mounted in the space occupied by Muff Cob in the Grisha-I and -II. Depth-charge racks can be mounted on the aft end of the mine rails. Also built in Soviet Far East. Several Pacific Fleet units serve the KGB Maritime Border Guard; at least one has had an extra boat added to port of the stack, stowed on an 01-level platform. One has 76-mm DP aft, only one RBU-6000 RL, and Strut Pair vice Strut Curve radar.

• 9 Grisha-II class

Bldrs: Zelenodolsk SY (In serv. 1974- . . .)

AMETIST IZUMRUD BRILLIANT RUBIN

MRUD SAFFIR
RIN ZHEMCHUG

AFFIR 3 others

A: 4/57-mm DP (II \times 2) — 2/RBU-6000 ASW RL (XIII \times 2) — 4/533-mm TT (II \times 2) — 2/d.c. racks (12 d.c.) or mines.

Remarks: See Grisha-I entry for other data. Soviet type designation: PSKR—
Pogranichniy Storozhevoy Korabl' (Border Patrol Ship). Manned by the KGB Maritime Border Guard. A second twin 57-mm was substituted for SA-N-4 forward, and
the Pop Group missile-control radar was not installed. At least one Black Sea Fleet
unit has had a boat added to port of the stack, stowed on a new 01-level platform; the
after twin 57-mm DP was removed as weight compensation.



Zhemchug - Grisha-II class, 57-mm guns fore and aft

1983

♦ 15 Grisha-I class Bldrs: Zelenodolsk SY, . . . (In serv. 1968-74)

D: 850 tons (1,100 fl) S: 30 kts Dim: 71.6 × 9.8 × 3.7

A: 1/SA-N-4 syst. (II × 1, 20 missiles) — 2/57-mm DP (II × 1) — 2/RBU-6000 ASW RL (XII × 2) — 4/533-mm TT (II × 2) — 2/d.c. racks (12 d.c.) or mines Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Pop Group, 1/Muff Cob (Grisha-III: Bass Tilt)

Sonar: 1/MF hull-mounted, 1/HF dipping EW: 2/Watch Dog — IFF: 1/High Pole-B, 1/High Pole-A

M: CODAG: 4 diesels; 1/15,000-hp gas turbine; 3 props; 31,000 hp

Range: 450/27; 4,500/10 Man: 60 tot.



Grisha-III class-topmast askew

Remarks: More specialized for ASW than the earlier Petya and Mirka "patrol ships." Russian type designation: MPK—Malyy Protivolodochnyy Korabl' (Small Antisubmarine Ship). A plate has been added forward of the Muff Cobb fire-control radar to protect personnel on the bridge from its radiation. The dipping sonar is housed beneath a hump to starboard on the after deckhouse, evidently deploying through the hull bottom.



Unique Grisha-I—with rubbing strake fore and aft of anchor pocket, Square Head IFF interrogator aft

U.S. Navy, 2-80



Grisha-I class

French Navy, 1977



Grisha-I class

French Navy, 1982

◆ 1 Modified Petya-II class



Modified Petya-II class

7-78

A: 4/76.2-mm DP—2/RBU-6000 ASW RL (XII \times 2) — 5/400-mm ASW TT (V \times 1) —mines

Remarks: Conversion in 1978 similar to Modified Petya-I, but new VDS deckhouse at stern does not extend to the sides of the ship, which permits retention of mine rails. One quintuple ASW torpedo-tube mounting and the d.c. racks have been removed. Apparently experimental, as only one was converted.

11 Modified Petya-I class
 Bldrs: Kaliningrad SY, Komsomol'sk SY (In serv. 1961-64)



Modified Petya-I class - small deckhouse at stern

1980



Modified Petya-I class - standard version

U.S. Navy, 8-83



Modified Petya-I - standard configuration

L. & L. Van Ginderen, 9-83



Petya-I modified for possible towed-array research

6-80

A: Standard version (see Remarks): 4/76.2-mm DP (II \times 2) -2/RBU-2500 RL -5/400-mm ASW TT (V \times 1) -1/d.c. rack

A: Others 2/76.2-mm DP (II \times 1), 2/RBU-2500 ASW RL (XVI \times 2)

Remarks: Conversions began in 1973. Petya-I class altered by the addition of a medium-frequency towed sonar in a new raised stern deckhouse. The designation "Modified Petya I" is also applied to several trials units, one with a very large VDS exposed at the stern (no raised stern); another with a deckhouse abaft the stack and a complex towing array, reels, and winch on her stern; still another with a small, boxlike deckhouse containing a towed sensor at the extreme stern. At least one "standard" Mod. Petya-I has Strut Curve via Slim Net air-search radar. Some have 2/Don-2.

♦ 20 Petya-II class

Bldrs: Kaliningrad SY, Khabarovsk SY (1964-69)



Petya-II

U.S. Navy, 8-83



Petya-II - 2/RBU-6000, 10/400-mm TT, Strut Curve

1977

♦ 7 Petya-I class

Bldrs: Kaliningrad SY Khabarovsk SY (In serv. 1961-64)



Petya-I - 4/RBU-2500, 5/400-mm TT, Slim Net

D: 950 tons (1,150 fl) S: 30 kts Dim: 81.8 (78.0 pp) × 9.2 × 2.8 (hull)

A: Petya-I: 4/76.2-mm DP (II × 2) — 4/RBU-2500 ASW RL (XVI × 4) — 5/400mm ASW TT (V × 1) — 2/d.c. racks — mines

Petya II: 4/76.2-mm DP (II \times 2) -2/RBU-6000 ASW RL (XII \times 2) -10/400-mm ASW TT (V \times 2) -2/d.c. racks - mines

Electron Equipt: Radar: 1/Don-2, 1/Slim Net or Strut Curve, 1/Hawk Screech Sonar: 1/HF hull-mounted, 1/HF helo dipping sonar (on some) EW: 2/Watch Dog—IFF: 1/High Pole-B

M: CODAG: 2/15,000 hp gas turbines + 1/6,000-hp Type 61V-3 diesel; 3 props; 36,000 hp

Range: 450/29 (diesel + gas turbine); 1,800/16 (diesel) Man: 8 officers, 84 men

Remarks: Soviet type designation: SKR—Storozhevoy Korabl' (Patrol Ship). Most carry helicopter dipping sonars in temporary installations amidships. Petya-I has two Square Head IFF interrogators. A version with two RBU-2500 rocket launchers and three 533-mm torpedo tubes (III × 1) was built for export to Ethiopia, India, Syria, and Vietnam, while six standard Petya-IIs were exported from Soviet Navy inventory to Vietnam and Ethiopia during 1983-84. The diesel drives the centerline CP prop and can drive the ships at up to 16 kts. Two small electro-hydraulic maneuvering propellers are mounted at the extreme stern and can produce 3 kts. The teardrop-shaped sonar dome adds 1.5 m to the navigational draft. Some Petya-Is have Slim Net search radars; all Petya-IIs and other Petya Is have Strut Curve. One Black Sea Fleet Petya-I or -II carried a twin SUW-N-1 ASW RL on the bow in place of the gunmount in 1976.

• 9 Mirka-I class Bldr: Kaliningrad SY (In serv. 1964-65)



Mirka-I class - 4/RBU-6000, 5/400-mm TT, Slim Net

U.S. Navy, 1984



Mirka-I — with dipping sonar cabinet abaft after gunmount, to starboard

• 9 Mirka-II class Bldr: Kaliningrad SY (In serv. 1965-66)

IVAN SLADKOV GANGUTETS 7 others



Mirka-II class - with Slim Net and dipping sonar

1977



Mirka-II class—with Strut Curve radar and dipping sonar at stern

French Navy, 7-84

D: 950 tons (1,150 fl) S: 34 kts Dim: 82.4 × 9.2 × 2.9 (hull)

A: Mirka-I: 4/76.2-mm DP (II \times 2) — 4/RBU-6000 ASW RL (XII \times 4) — 5/400-mm ASW TT (V \times I) — 1/d.c. rack Mirka-II: 4/76.2-mm DP (II \times 2) — 2/RBU-6000 ASW RL (XII \times 2) —

 $\begin{array}{l} 10/400\text{-mm ASW TT (V}\times2) \\ \textbf{Electron Equipt:} \ \ \text{Radar: } 1/\text{Don-2, } 1/\text{Slim Net or Strut Curve, } 1/\text{Hawk Screech} \\ \text{Sonar: } 1/\text{HF hull-mounted} - \text{Mirka-II also: } 1/\text{dipping} \end{array}$

EW: 2/Watch Dog — IFF: 1/High Pole-B, 2/Square Head

M: CODAG: 2/15,000-hp gas turbines + 2/6,000-hp diesels; 2 props in pump-jet tunnels

Range: 500/30 (gas turbine); 4,800/10 (1 diesel) Man: 8 officers, 84 men

Remarks: Soviet type designation: SKR—Storozhevoy Korabl' (Patrol Ship). Propulsion system similar in concept to that of the Poti class, using gas turbines to power compressors that inject air into tunnels beneath the ship to produce a jet effect; the diesel-driver propellers are also within the tunnels, while the gas turbine exhaust residual thrust contributes to the overall power. All Mirka-Is have Slim Net, while a few late Mirka-IIs have Strut Curve. All Mirka-IIs have been modernized with a dipping sonar in place of the internal depth-charge rack on the port side of the stern.

 48 Riga class Bldrs: Yantar SY, Kaliningrad; Khabarovsk SY, Marti SY, Nikolayev (In serv. 1952-58) — 14 or more in reserve.

Known names:

ASTRAKHAN'SKIY
KOMSOMOLETS
ARKHANGEL'SKIY
KOMSOMOLETS
BARS ("Snow Leopard")
BARSUK ("Badger")
BOBR ("Beaver")
BUYVOL ("Buffalo")
BYK ("Bull")
GEPARD ("Cheetah")

GIENA ("Hyena")
KOBCHIK ("Merlin")
KOMSOMOLETS GRUZIY
KOMSOMOLETS LITVIY
KRASNODARSKIY
KOMSOMOLETS
KUNITSA ("Martin")
LEOPARD ("Leopard")
LEV ("Lion")
LISA ("Fox")

MEDVED' ("Bear")
PANTERA ("Panther")
RYS (" . . .")
ROSOMAKHA ("Wolverine")
SHAKAI. ("Jackal")
TIGR ("Tiger")
TURMAN ("")
VOLK ("Wolf")
VORON ("Raven")
YAGUAR ("Jaguar")



Riga class - only one with Bell Series radomes, tall stack cap

1972



Riga class

PH2 P. Soutar, U.S.N., 9-83

D: 1,260 tons (1,480 ft) S: 30 kts Dim: 91.0 \times 10.2 \times 3.2 (4.4 max.) A: 3/100-mm DP (I \times 3) - 4/37-mm AA (II \times 2) - 4/25-mm AA (II \times 2) - 2 or 3/533-mm ASW TT (II or III \times 1) - 2/RBU-2500 ASW RL (XVI \times 2) - 2/d.c. racks - mines

Electron Equipt: Radar: 1/Neptune or Don-2, 1/Slim Net, 1/Sun Visor Sonar: 1/HF (Herkules or Pegas) EW: 2/Watch Dog

IFF: 1/High Pole, 2/Square Head

M: 2 sets GT; 2 props; 20,000 hp Boilers: 2; 27 kg/cm², 360°C

Fuel: 230 tons Electric: 450 kw

Range: 550/28; 2,000/13 Man: 16 officers, 154 men

Remarks: Soviet type designation: SKR—Storozhevoy Korabl' (Patrol Ship). One ship has a Hawk Screech radar director forward and the main gun director aft. Transfers to other countries include Indonesia, Finland, Bulgaria, China, and East Germany. A few reserve examples may retain the original ASW ordnance suit of 1/MBU-600 Hedgehog, 4/BMB-2 d.c. mortars, and 2 d.c. racks. Not all active units have had the two twin 25-mm AA added abreast the stack. Obsolescent.

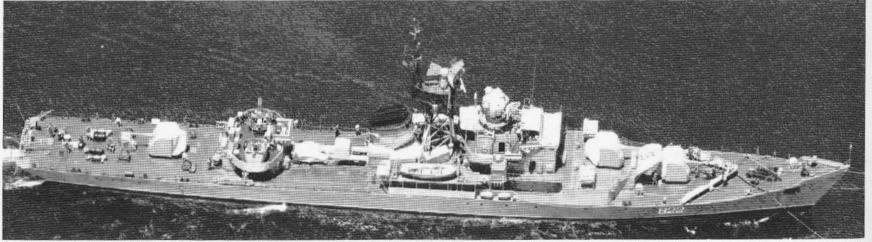
GUIDED-MISSILE CORVETTES

◆ 10 (+ . . .) Tarantul-II class SY, Leningrad (In serv. 1981- . . .)



Tarantul-II - Band Stand atop bridge, Light Bulb atop mast

1981



Riga class - no 25-mm AA abreast stack, twin TT

GUIDED-MISSILE CORVETTES (continued)



Tarantul-II class

M.O.D., Bonn, 1982

Electron Equipt: Radar: 1/Kivach, 1/Band Stand, 1/Light Bulb, 1/Bass Tilt Remarks: Other data as for Tarantul-I, except that one unit (Tarantul-III?) has 4/SS-N-22 missiles (II × 2) vice SS-N-2C. Light Bulb may be a data link antenna., vice radar

• 2 Tarantul-I class

Bldr: Petrovskiy SY, Leningrad (In serv. 1979- 80)



Tarantul-I class — upper missile-tube doors open

M.O.D., Bonn, 1982



Tarantul-I class

1979

D: 480 tons (540 fl) **S:** 36 kts **Dim:** 56.5 (52.5 wl) \times 10.5 (9.4 wl) \times 2.50 **A:** 4/SS-N-2C (II \times 2) - 1/76.2-mm DP - 1/SA-N-5 system (IV \times 1, . . . Grail missiles) - 2/30-mm gatling AA (VI \times 2)

Electron Equipt: Radar: 1/Kivach, 1/Bass Tilt, 1/Plank Shave targeting EW: 4/passive arrays, 2/chaff RL (XVI × 2) IFF: 1/High Pole, 1/Square Head

M: CODOG or COGOG: 2 NK-12M gas turbines (12,000 hp each), 2 cruise diesels or gas turbines; 2 props; 6,000-8,000 hp
Man: 38 tot. Range: 400/36; 2,000/20

Remarks: Two prototype Tarantul-I retained for trials; others, all for export, have been built at Volodarskiy SY, Rybinsk. Tarantul-II is apparently intended as the successor to the Osa-series, although it is not being built in great numbers.

♦ 6 or 7 (+...) Nanuchka-III class SY, Vladivostok (In serv. 1977-...)

Bldr: Petrovskiy SY, Leningrad, and Ulis



Nanuchka class - 30-mm gatling gun, 76.2-mm DP aft

U.S. Navy, 10-80



Nanuchka-III class—Band Stand on higher pilothouse than Nanuchka-I U.S. Navy, 5-84

D: 770 tons (fl) **S:** 32 kts **Dim:** $59.3 \times 12.6 \times 2.4$

A: 6/SS-N-9 (III \times 2) — 1/SA-N-4 system (II \times 1, 20 missiles) — 1/76.2-mm DP — 1/30-mm gatling AA (VI \times 1) Range: 900/30; 2,500/12 (1 engine)

Electron Equipt: Radar: 1/Peel Pair, 1/Band Stand, 1/Bass Tilt EW: 2/passive arrays, 2/chaff RL (XVI \times 2) IFF: 1/High Pole, 1/Square Head

M: 3 paired M504 diesels; 3 props; 30,000 hp Man: 60 tot.

Remarks: Soviet type designation: MRK—Malyy Raketnyy Korabl' (Small Missile Ship). The single 76.2-mm DP was substituted for the twin 57-mm AA aft, the gatling gun is in the position occupied by Muff Cob in the Nanuchka-I, and Bass Tilt is situated atop a new deckhouse abaft the mast. The pilothouse is higher and the superstructure is enlarged. The 30-mm gatling gun is off centerline, to starboard.

♦ 17 Nanuchka-I class

Bldr: Petrovskiy SY, Leningrad (In serv. 1969-76)

Burun Molniya Grad Musson

DLNIYA RADUGA ISSON SHKVAL SHTORM

TSIKLON ZARNITSA

ZyB' 6 others



Nanuchka-I class-late version

U.S. Navy, 5-83



Nanuchka-I class—early version with free-standing missile blast shields French Navy, 1982

D: 770 tons (fl) S: 32 kts Dim: 59.3 × 12.6 × 2.4

A: 6/SS-N-9 (II \times 3) — 1/SA-N-4 system (II \times 1, 20 missiles) — 2/57-mm DP (II \times 1)

Electron Equipt: Radar: 1/Peel Pair, 1/Pop Group, 1/Muff Cob, 1/Band Stand EW: 2/passive arrays, 2/chaff RL (XVI × 2) IFF: 1/High Pole, 1/Square Head

M: 3 paired M504 diesels; 3 props; 30,000 hp Range: 900/30; 2,500/12 (1 engine) Man: 60 tot.

Remarks: Soviet type designation: MRK—Malyy Raketnyy Korabl' (Small Missile Ship). Named for meteorological phenomena; some of the names above may apply to the Nanuchka-III version. These are reported to be poor sea boats with very unreliable engines. Early units have separate blast shields abaft the SS-N-9 launchers; they have smaller engine air intakes and may employ paired M503 diesels for 24,000 hp total, 30

GUIDED-MISSILE CORVETTES (continued)

kts max. Band Stand is associated with target designation for the SS-N-9 missiles. New EW antennas are being added near the top of the mast. The similar Nanuchka-II for export has 4 SS-N-2C missiles.

CORVETTES

Bldr: . . . (In serv. 1980- . . .) ♦ 14 or more Pauk class

Komsomolets Gruzin ODESSKIY KOMSOMOLETS 12+ others



Pauk class-KGB unit with low pilothouse

U.S. Navy, 1985



Pauk class

U.S. Navy, 1984

D: 480 tons (580 fl) **S:** 28-32 kts **Dim:** $58.5 \times 9.4 \times 2.5$

A: 1/76.2-mm DP-1/SA-N-5 SAM syst. (IV \times 1, . . . Grail missiles)-1/30-mm gatling AA-2/RBU-1200 ASW RL (V \times 2)-4/400-mm ASW TT (I × 4) - 2/d.c. racks (12 d.c.)

Electron Equipt: Radar: 1/Spin Trough, 1/air-surface search, 1/Bass Tilt Sonar: 1/MF hull-mounted, 1/MF dipping EW: . . . passive arrays; 2/chaff RL (XVI × 2)

M: 2 paired M504 diesels; 2 props; 20,000 hp Man: 40 tot.

REMARKS: Built in the Baltic and Pacific areas. Some appear to be operated by the KGB Maritime Border Guard. This class uses same hull as Tarantul-class missile corvette but has ASW armament vice SS-N-2C and an all-diesel propulsion plant vice Tarantul's COGOG/CODOG system. A large housing for a dipping sonar system projects 2 m out from the stern. A new variant noted in 1982 in the Baltic has the pilothouse one half-deck higher. Platforms on the mast are intended to carry EW arrays, while there is a backup optical director for the single gatling AA gun; Bass Tilt can control both the 76-mm and 30-mm guns. The main engines are probably the same twin diesels as used in the Nanuchka class. Probable Soviet designation MPK-Malyy Protivolodochnyy Korabl' (Small Antisubmarine Ship), and apparently intended to replace the Poti class

60 or fewer Poti class

Bldrs: Zelenodolsk SY, poss. others (In serv. 1961-67)



L. & L. Van Ginderen, 1984

D: 400 tons (fl) S: 38 kts Dim: 59.4 × 7.9 × 2.0 (hull)

2/57-mm DP (II × 1) - 2/RBU-6000 ASW RL (XII × 2) - 2 or 4/400-mm TT (I × 2 or 4)

Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Muff Cob

Sonar: 1/HF hull-mounted, 1/Hormone dipping EW: 2/Watch Dog - IFF: 1/High Pole-B

M: CODAG: 2 M503A diesels (8,000 hp) + 2 gas turbines (40,000 hp); 2 props Range: 500/37; 4,500/10 (1 diesel) Man: 40 tot.

Remarks: Soviet type designation: MPK-Malyy Protivolodochnyy Korabl' (Small Antisubmarine Ship). Several have old-style open 57-mm AA mounts and two RBU-2500. This class has been exported to Romania and Bulgaria. The two propellers are mounted in thrust tubes of the same length as the poop, which contains the two turbines; the jets exhaust through ports in the stern and also power air compressors that exhaust into the propeller tubes, producing a thrust-jet effect. Slowly being stricken, as Pauk class enters service.

 6 Ivan Susanin-class patrol icebreakers (In serv. 1975-81)

Bldr: Admiralty SY, Leningrad

IMENI XXV SEZDA K.P.S.S. AYSBERG NEVA IMENI XXVI SEZDA K.P.S.S. DUNAY VOLGA



Imeni XXV Sezda K.P.S.S.

1977

D: 3,400 tons S: 14.5 kts Dim: 70.0 (62.0 pp) × 18.3 × 6.5 A: 2/76.2-mm DP (II \times 1) -2/30-mm gatling AA (I \times 2)

Electron Equipt: Radar: 2/Don-Kay, 1/Strut Curve, 1/Owl Screech IFF: 1/High Pole-B

M: 3 Type 13D100 diesels, electric drive; 2 props; 5,400 hp Fuel: 550 tons Electric: 1,000 kw Range: 5,500/12.5; 13,000/9.4 Man: 140 tot.

Remarks: Operated by the KGB Maritime Border Guard in the Pacific area. KGB Type designator: Pogranichnyy Storozhevoy Korabl' (Border Patrol Ship). Two sisters, disarmed and painted with black hull and white superstructure, serve as naval auxiliaries: Ivan Susanin and Ruslan. Have a helicopter deck aft, but no hangar. The gatling AA guns have only lead-computing ringsight directors; Bass Tilt radar directors are not fitted. The Owl Screech radar director controls the 76.2-mm DP mount. Dunay and Neva also have two positions for hand-launching SA-N-5/SA-7 Grail

1 Purga-class patrol icebreaker

Bldr: . . . SY, Leningrad

N. . . (ex-Purga) (In serv. 1955)



The Purga-class icebreaker

1983

D: 4,500 tons (fl) S: 18 kts Dim: 97.5 × 15.2 × 6.4

A: 4/100-mm DP (I × 4) - mines

Electronic Equipt: Radar: 2/Don-2, 1/High Sieve, 1/Strut Curve, 1/Sun Visor-B

EW: 2/Watch Dog - IFF: 2/High Pole

M: 4 diesels; electric drive; 2 props; 8,000 hp Man: 250 tot.

REMARKS: Operated by the KGB Maritime Border Guard in the Pacific. Laid down prior to World War II and launched circa 1952. Has a Wasp Head stabilized optical GFCS, with Sun Visor radar. Formerly also carried 8/37-mm AA (II × 4). Riveted construction.

Bldr: Yaroslavl SY (In serv. 1974-) 12 Sorum-class armed tugs

Камснатка PRIMORSK YAN BERZIN' AMUR ZABAYKALYE BREST KARELIYA PRIMORYE . . . (065) Сникотка LADOGA SAKHALIN

CORVETTES (continued)



D: 1,210 tons (1,656 fl) S: 14 kts Dim: $58.3 \times 12.6 \times 4.6$ A: 4/30-mm AK-230 AA (II \times 2)

M: 2/30-mi RA-230 AR (1/2) Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-B M: 2 Type 5-2D42 diesels, electric drive; 1 prop; 1,500 hp Fuel: 322 tons Range: 6,720/13 Man: 35 tot.

Remarks: Armed units of a standard naval/commercial seagoing tug, used by KGB Maritime Border Guard for patrol duties. Typed PSKR—Pogranichnyy Storozhevoy Korabl' (Border Patrol Ship).

Note: Several Okhtenskiy-class seagoing tugs have also been employed by the KGB Maritime Border Guard, armed with a twin 57-mm gunmount. See later page, under tug version, for details.

♦ 7 T-58-class ex-minesweepers (In serv. 1957-61)

IRKUTSKIY KOMSOMOLETS
KALININGRADSKIY KOMSOMOLETS
KOMSOMOLETS LATVIY
MALAKHIT

P. Vinogradev Primorskiy Komsomolets Sovetskiy Pogranichnik



T-58 class

U.S. Navy, 4-83

D: 725 tons (860 fl) S: 18 kts Dim: 70.0 × 9.1 × 2.5

A: 4/57-mm AA (II × 2) — 2/RBU-1200 ASW RL (V × 2) — 2/d.c. racks — mines Electron Equipt: Radar: 1/Spin Trough, 1/Don-2, 1/Muff Cob

Sonar: 1/HF hull mounted

EW: 2/Watch Dog

IFF: 2/Square Head, 1/High Pole-A

M: 2 diesels; 2 props; 4,000 hp Range: 2,500/13.5 Man: 60 tot.

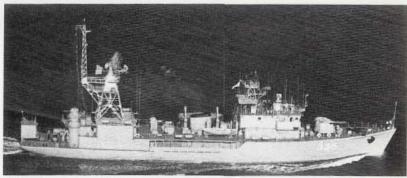
Remarks: Reclassified SKR—Storozhevoy Korabl' (Patrol Ship) in 1978 and portable minesweeping gear offloaded. Some are operated by the KGB Maritime Border Guard as PSKR—Pogranichnyy Storozhevoy Korabl' (Border Patrol Ship). Most are in the Pacific Fleet. One has been transferred to Guinea, one to Yemen, and others have been converted as radar pickets, with a Big Net radar aft. (See below.)

• 3 T-58-class radar pickets, former minesweepers (In serv. 1957-61)



T-58-class radar picket - former minesweeper

U.S. Navy, 1981



T-58-class radar picket

M.O.D., Bonn, 1981

D: 760 tons (880 fl) S: 17 kts Dim: 70.0 × 9.1 × 2.5

A: 2/57-mm AA (II \times 1) -4/30-mm AA (II \times 2) -2/SA-N-5 syst. (IV \times 2, 16 SA-7 Grail missiles) -2/d.c. racks

Electron Equipt: Radar: 1/Spin Trough, 1/Strut Curve, 1/Big Net, 1/Muff Cob Sonar: HF hull-mounted—EW: . . .

M: 2 diesels; 2 props; 4,000 hp Range: 2,500/13.5 Man: 100 tot.

Remarks: First unit conversion completed 1979 at Izhora SY, Leningrad, second in 1981, third around 1983-84. Considering the small number converted, the age of the hulls, and the pace of the program, these ships are probably intended for a specialized range security role, rather than as classical "radar pickets." Naval-operated.

Note: The few remaining T-43 radar picket-class former minesweepers are believed to have been discarded, as none has been sighted since 1976.

• 11 T-43 class ex-minesweepers (In serv. 1947-57)



T-43-class Border Patrol Ship - 60-meter version

1981

Remarks: Data as for minesweeper version on later page. Portable minesweeping gear deleted (winch and crane retained). Reclassified during 1970s when transferred to the KGB Maritime Border Guard as PKSR—Pogranichnyy Storozhevoy Korabl' (Border Patrol Ship). Operate in the Pacific area. A few have 2/45-mm AA vice 4/37-mm AA.

GUIDED-MISSILE PATROL BOATS

◆ 16 Matka-class semi-hydrofoils Bldr: Izhora SY, Kolpino (In serv. 1978-81)



Matka class at speed, on foils, with Plank Shave targeting radar

GUIDED-MISSILE PATROL BOATS (continued)



Matka class hull-borne - note low freeboard

D: 225 tons (260 fl) S: 40 kts Dim: 40.0 × 12.0 (7.6 hull) × 2.1 (hull; 3.2 foils) A: 2/SS-N-2C (I × 2) - 1/76.2-mm DP - 1/30-mm gatling AA

Electron Equipt: Radar: 1/Cheese Cake, 1/Plank Shave, 1/Bass Tilt

EW: 2/chaff launchers (XVI × 2) IFF: 1/High Pole-B, 1/Square Head

M: 3 M504 diesels; 3 props; 15,000 hp Range: 400/36; 650/25 Man: 30 tot.

Remarks: Essentially, a missile-armed version of the Turya-class hydrofoil torpedo boat, with larger superstructure, 76.2-mm gun forward, and missiles and gatling gun aft. Construction proceeded very slowly. Uses Plank Shave targeting radar, larger than Square Tie. Appears to be overloaded, and construction ceased in favor of the Tarantul-series.

1 Sarancha class

Bldr: Petrovskiy SY, Leningrad (In serv. 1977)



Sarancha class - note two steps to bottom of hydroplane hull

D: 320 tons (fl) S: 58 kts

Dim: 53.6 (50.6 foils down hull) × 31.3 (11.0 hull) × 7.3 (2.6 hull)

A: 4/SS-N-9 (II × 2) — 1/SA-N-4 syst. (II × 1, 20 missiles) — 1/30-mm gatling AA (VI × 1)

Electron Equipt: Radar: 1/Band Stand, 1/Pop Group, 1/Bass Tilt IFF: 1/Square Head, 1/High Pole-B

M: 2 gas turbines; 4 props; 30,000 hp

REMARKS: Too large and complex to be a successor to the Osa class. Essentially a reduced, high-speed Nanuchka. Folding-foil system, with 2 propellers on each of two pods on the after foils. Stepped hydroplane hull bottom. Not a success.

◆ 32 Osa-II class (In serv. 1966-70)

AMURSKIY KOMSOMOLETS Brestskiy Komsomolets KALININGRADSKIY KOMSOMOLETS

KIROVSKIY KOMSOMOLETS Tambovskiy Komsomolets 27 others



Osa-II class

1978



Osa-II class - with quadruple SA-N-5 Grail launcher abaft Drum Tilt

1976

D: 215 tons (245 fl) S: 35 kts Dim: 38.6 × 7.6 × 2.0 A: 4/SS-N-2B/C Styx (I × 4) - 4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 1/High Pole-B, 2/Square Head

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Soviet type designation: RKA-Raketnyy Kater (Missile Cutter). Some units have been given SA-N-5 systems aft. Widely exported during 1970-present, primarily using new-built units. Some reports indicate that they are mediocre sea boats and that the engines (which have been replaced by Western diesels in many transferred units) are very temperamental. Numbers beginning to decline, through foreign transfer and attrition.

* 58 Osa-I class

Komsomolets Tatariy

Bldrs: Various (In serv. 1959-66)

KRONSHTADTSKIY KOMSOMOLETS

56 others

Osa-I class-rib-sided SS-N-2 launchers

1974



Osa-I class - quadruple SA-N-5 launcher abaft Drum Tilt, smooth-sided launchers U.S. Navy, 5-84

D: 185 tons (215 fl) S: 36 kts Dim: 38.6 × 7.6 × 1.8

A: 4/SS-N-2 Styx (I × 4) - 4/30-mm AA (II × 2) - 1/SA-N-5 SAM syst. $(IV \times 1)$ in some

Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 1/High Pole-B, 2/Square Head

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Originally built by Petrovskiy SY, Leningrad, but other yards were also involved in the program. Soviet type designation: RKA-Raketnyy Kater (Missile Cutter). These small craft can launch their missiles in a Force-4 sea (2-m waves). Many of them have been transferred to other navies. Some have been built as, or converted to, targets. Stenka, Matka, Turya, and Mol (an export torpedo boat, see Somalia) all use Osa hulls and propulsion plants. Diminishing in numbers as some are now over 25 years old.

PATROL BOATS

 ◆ 4 (+ . . .) Muravey-class hydrofoils Bldr: (In serv. 1982- . . .)

D: 230 tons (fl) S: . . . Dim: 38.6 × 7.6 × . . . A: 1/76.2-mm DP—1/30-mm gatling AA—4/400-mm ASW TT

PATROL BOATS (continued)

Electron Equipt: Radar: . . Sonar: .

M: . . . Range: . . . Man: . . .

Remarks: First reported 1983. No further data available. May be KGB Maritime Border Guard-subordinated.

Bldr: . . . (In serv. 1978) 1 Babochka class



Babochka class

D: 400 tons (fl) S: 45 kts Dim: 50.0×13.0 (8.5 hull) \times . . . A: 8/400-mm ASW TT (IV \times 2) -2/30-mm gatling AA (VI \times 2) Electron Equipt: Radar: 1/Don-2, 1/Peel Cone, 1/Bass Tilt M: CODOG: 2 cruise diesels, 3 gas turbines; 3 props; 30,000 hp (max.)

REMARKS: A prototype ASW hydrofoil with fixed, fully submerged foils fore and aft. The torpedo tubes are mounted, two on two, on either side of the forecastle between the forward gatling gun and the superstructure.

 1 Slepen class Bldr: Petrovskiy SY, Leningrad (In serv. circa 1969)

D: 205 tons (230 fl) S: 36 kts Dim: 38.6 × 7.6 × 1.9 A: 1/76.2-mm DP-1/30-mm gatling gun

Electron Equipt: Radar: 1/Don-2, 1/Bass Tilt

EW: 2/passive arrays, 2/chaff RL (XVI × 2)

IFF: 1/High Pole-B, 2/Square Head

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Trials craft for systems for small combatants. Twin 57-mm AA replaced by single 76.2-mm DP forward in 1975. Resembles a Matka but does not have missiles or hydrofoils.

 100 or more Stenka class Bldrs: Petrovskiy SY, Leningrad; . . . (In serv. 1967- . . .)



Stenka class - with new navigational radar

U.S. Navy, 11-84



Stenka - with Pot Drum nav. radar

L. & L. Van Ginderen, 9-83

D: 170 tons (210 fl) S: 36 kts Dim: $\$9.5 \times 7.6 \times 1.8$ A: 4/30-mm AA (II × 2) — 4/400-mm ASW TT — 2/d.c. racks (12 d.c.)

Electron Equipt: Radar: 1 Pot Drum or . . . , 1/Drum Tilt Sonar: 1/Hormone-helicopter, dipping IFF: 1/High Pole-B, 2/Square Head

M: 3 M503A diesels; 3 props; 12,000 hp Range: 550/34; 750/25 Man: 22 tot.

REMARKS: Soviet type designation: PSKR-Pogranichnyy Storozhevoy Korabl' (Border Patrol Ship). Recent units have a new navigational radar vice Pot Drum. Manned by the Maritime Border Guard of the KGB.

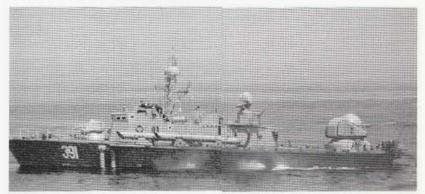
Note: All remaining S.O.-1-class ASW patrol boats are believed to have been stricken or transferred abroad.

HYDROFOIL TORPEDO BOATS

Bldr: Ulis SY, Vladivostok; Srednyy Neva SY, Kolpino (In * 31 Turya class serv. 1974-79)



Turya class at speed, bow raised on foil



Turya class at low speed, in displacement condition

G. Koop, 1984

D: 215 tons (250 fl) S: 40 kts

Dim: 39.0×7.6 (12.5 over foils) \times 2.0 (4.0 over foils)

A: 2/57-mm AA aft (II × 1) - 2/25-mm AA (II × 1) - 4/533-mm TT (I × 4)

Electron Equipt: Radar: 1/Pot Drum, 1/Muff Cob Sonar: 1/Hormone-helicopter, dipping IFF: 1/High Pole-B, /Square Head

M: 3 M504 diesels; 3 props; 15,000 hp Range: 400/38; 650/25 Man: 24 tot.

REMARKS: Fixed hydrofoils forward only; stern planes on water surface. Has Osa-II hull and propulsion. The dipping sonar is housed in a sponson over the starboard quarter. Nine of this class, without dipping sonar, have been delivered to Cuba since 1-79, and others have been exported to Vietnam and Kampuchea.

Note: The remaining Shershen-class torpedo boats are believed to have been stricken or transferred abroad.

PATROL CRAFT

30 or more Zhuk class Bldr: . . . (In serv. 1975- . . .)



Zhuk class — export version (for the Seychelles), with 4/14.5-mm mg (II \times 2) French Navy, 1983

PATROL CRAFT (continued)

D: 48 tons (60 fl) S: 34 kts Dim: 24.0 × 5.0 × 1.2 (1.8 props) A: 2/14.5-mm mg (II × 1) Electron Equipt: Radar: 1/Spin Trough M: 2 M50 F-4 diesels; 2 props; 2,400 hp Fuel: 10 tons Range: 700/28; 1,100/15 Man: 12 tot.

REMARKS: Probably manned by the KGB Border Guard. A large number have been exported, armed with a side-by-side turretted gunmount, as shown in the photo; Soviet units have one (or occasionally two) over-and-under gunmounts.

Note: All units of the Pchela hydrofoil patrol craft class and all Poluchat-I-class patrol craft are believed to have been stricken.

RIVERINE CRAFT

Note: The U.S.S.R. maintains a number of river gunboats on the Lower Danube, on the Amur and Ussuri river systems in the Far East, and possibly elsewhere. In addition to gunboats, the riverine forces have a few support craft, including the administrative craft SSV-10 (ex-PS 10) on the Danube (360 tons, 49 m overall).



SSV-10 (former number) — flagship of the Danube Flotilla, with two 45-mm saluting cannon abreast stack

♦ 15 (+ . . .) Yaz class monitors

Bldr: . . . (In serv. 1981- . . .)



Yaz class

D: Approx. 400 tons (fl) S: 14-16 kts Dim: 60.0 × . . . × . . . A: 2/100-120-mm tank guns (I \times 2) -2/30-mm gatling AA (I \times 2) $-\ldots$ Electron Equipt: Radar: 1/Spin Trough or Kivach, 1/Bass Tilt M: Diesels; 2 props; . . . hp Man: . . .

REMARKS: Low-freeboard monitors for the Amur River Flotilla. Also reported in service are 2 Pivyaka-class river monitors and several Vosh-class; no data available.

• 81 Shmel-class patrol gunboats

Bldr: . . . (In serv. 1967-74)



Shmel class-RL, armored 25-mm mount aft

4-80

D: 60 tons (fl) S: 22 kts Dim: 28.3 × 4.6 × 0.9

A: 1/76.2-mm, 48 cal., fwd in a tank turret—2/25-mm AA (II × 1) aft—5/7.62mm mg (I × 5) -1/122-mm RL (XVIII × 1) - mines

M: 2 M50F-4 diesels; 2 props; 2,400 hp Range: 240/20; 600/10 Man: 15 tot.

Remarks: Soviet type designation: AKA - Artilleriyskiy Kater (Artillery Cutter). Not all these craft have a rocket launcher. An earlier version has a twin machine-gun

mount aft that resembles a tank turret. One 7.62-mm is mounted coaxially with the 85-mm gun; the others fire through slits in the sides of the open-topped redoubt forward of the artillery RL. Four transferred to Kampuchea, 1984-85.

MINE WARFARE SHIPS

3 Alesha-class minelayers

Bldr: . . . (In serv. 1967-69)

PRIPET' VYCHEGDA



Vychegda - the first Alesha

1969



Vychegda

JMSDF, 10-85

D: 2,900 tons (3,500 fl) **S:** 17 kts **Dim:** $97.0 \times 14.0 \times 5.4$ **A:** 4/57-mm (IV \times 1) — 300 mines

Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Muff Cob

IFF: 1/High Pole-B

M: 4 diesels; 2 props; 8,000 hp Range: 4,000/16; 8,500/8 Man: 190 tot.

REMARKS: Can also be used as netlayers, minesweeper tenders, and command ships. The second and third ships had two kingposts and booms vice the forward crane.

 1 Natya-II-class fleet minesweeper serv. 1982)

Bldr: Sredniy Neva SY, Kolpino (In

♦ 35 Natya-I-class fleet minesweepers

Bldr: Various (In serv. 1970-1982)

ADMIRAL PERSHIN DIZELIST ELEKTRIK KONTRADMIRAL HOROSHKIN KURSKIY KOMSOMOLETS

(ex-Navodchik)

MASHINIST MINER MOTORIST PULEMETCHIK SIGNAL'SHCHIK SNAYPER TURBINIST VSEVOLOD VISHNEVSKIY





Natya class - early unit with gooseneck sweep gear davits

MINE WARFARE SHIPS (continued)



Natya-II class - note deckhouse on stern, no 25-mm AA or ASW RL

5-82



Natya-I class - with 2 SA-N-5 systems on superstructure abaft mast, articulated sweep-gear davits

D: 650 tons (750 fl) S: 18 kts Dim: 61.0 × 9.8 × 3.0

4/30-mm AA (II \times 2) -4/25-mm AA (II \times 2) -2/RBU-1200 ASW RL

 $(V \times 2)$ — mines

Electron Equipt: Radar: 1/Don-2, 1/Drum Tilt

Sonar: 1/HF

IFF: 1/High Pole-B, 2/Square Head

M: 2 diesels; 2 props; 5,000 hp Range: 1,800/16; 5,200/10 Man: 60 tot.

Remarks: Soviet type designation: MT-Morskoy Tral'shchik (Seagoing Minesweeper). Equipped to serve as ASW escorts. Early units have rigid davits aft; on later units they are articulated. Stem cut back sharply below waterline, as in T-43 and Yurka classes. Aluminum alloy hull. One, designated Natya-II and completed 1982, has a long deckhouse aft, no 25-mm AA or RBU-2500, but does have 2/SA-N-5 systems (IV × 2, 16 SA-7 Grail missiles). Two such SA-N-5 systems have been added to a number of units of the class, just abaft the lattice mast. Some also have an extra navigational radar atop the pilothouse. Current production is for export, with one unit delivered to Syria with no ASW ordnance or minesweeping gear in 1985. Six have been built for India and seven for Libya.

♦ 41 Yurka-class fleet minesweepers Bldr: . . .

YEVGENIY NIKONOV

Komsomolets Byelorussiy

37 others

SEMEN ROSHAL'

D: 400 tons (460 fl) S: 16 kts Dim: 52.0 × 9.3 × 2.0

A: 4/30-mm AA (II × 2) - 20 mines

Electron Equipt: Radar: 1 or 2 Don-2, 1/Drum Tilt

Sonar: H/F hull-mounted

IFF: 1/High Pole-B, 2-3/Square Head

M: 2 diesels; 2 props; 4,000 hp Range: 2,000/14; 3,200/10

Man: 45-50 tot.

Remarks: Soviet type designation: MT-Morskoy Tral'shchik (Seagoing Minesweeper). Aluminum-alloy hull. Four transferred to Egypt in 1969, one to Vietnam in 1979. Several have received 2 SA-N-5 SAM systems (IV × 2, 16 SA-7 Grail missiles).



Yurka class



Yurka with two SA-N-5 launchers, 2 Don-2 radars

9-83

♦ about 30 T-43-class fleet minesweepers

ASTRAKHANSKIY

IVAN FIOLETOV

Komsomolets

KONTRADMIRAL YUROKOVSKIY

KOMSOMOLETS KALMYKIY

LAMINE SADJIKABA MEZHADIY AZIZBAKOV

NIKOLAY MARKIN

Bldr: . . . (In serv. 1947-57) SAKHALINSKIY Komsomolets STEPHAN SAUMYAN



T-43 class-long-hull version

1975



T-43 class-short-hull version

1978

D: 500 tons (590 fl) **S:** 14 kts **Dim:** 60.0 × 8.6 × 2.3 A: 4/37-mm AA (II \times 2) — 0 or 4/25-mm AA (II \times 2) — 2/d.c. projectors — mines Electron Equipt: Radar: 1/Don-2 or Spin Trough, 1/Ball End Sonar: 1/Tamir-11 (H/F)

IFF: 1/Square Head, 1/High Pole-A

M: 2 Type 9D diesels; 2 props; 2,200 hp Electric: 550 kw Fuel: 70 tons Range: 3,200/10 Man: 65 tot.

Remarks: Soviet type designation: MT-Morskoy Tral'shchik (Seagoing Minesweeper). Many of the T-43 class have been transferred to Poland, Egypt, Algeria, China, etc. The version armed with four 25-mm AA amidships is 60 m long and displaces 590 tons (fl); early units were 58.0 m long, had less hull flare at the stern, and

MINE WARFARE SHIPS (continued)

displaced 569 tons (fl). Also built on the T-43 hull were radar pickets, noise-measurement ships, diving tenders, and trials ships. Well over 200 were built. Rapidly being disposed of, with many of the survivors probably in reserve. Eleven are operated by the KGB Border Guard as patrol ships, with sweep gear removed (see under Corvettes).

 45 Sonya-class coastal minesweepers Vladivostok (In serv. 1973- . . .) Bldr: Petrozavodsk SY; Ulis SY,

KOLOMENSKIY KOMSOMOLETS KOMSOMOLETS KIRGIZIY ORENBURGSKIY KOMSOMOLETS SEVASTOPOL'SKIY KOMSOMOLETS (ex-Komsomol'skiy Telegraf) 41 others



Sonya class

U.S. Navy, 11-84



Sonya class

1976

D: 380 tons (450 ft) S: 15 kts Dim: $48.8 \times 8.8 \times 2.1$ A: 2/30-mm AA (II \times 1) -2/25-mm AA (II \times 1) Electron Equipt: Radar: 1/Spin Trough IFF: 1/High Pole-B, 2/Square Head

M: 2 diesels; 2 props; 2,400 hp Range: -1,600/14; 3,000/10 Man: 40 tot.

Remarks: Soviet type designation: BT—Basovyy Tral'shchick (Base Minesweeper).

Wooden hull with plastic sheathing. Two transferred to Cuba, 1980, and two in 1985.

Several have received one SA-N-5 SAM system, abaft the boat, to starboard.

3 Zhenya-class coastal minesweepers

Bldr: . . . (In serv. 1967-1972)



Zhenya class

1974

D: 220 tons (300 fl)
 S: 16 kts
 Dim: 42.4 × 7.9 × 1.8
 A: 2/30-mm AA (II × 1)
 Electron Equipt: Radar: 1/Spin Trough
 M: 2 diesels; 1 props; 2,400 hp
 Range: 1,400/14
 Man: 40 tot.

Remarks: Soviet type designation: BT—Basovyy Tral'shchik (Base Minesweeper).
Glass-reinforced plastic hull. Apparently not successful, as the similar, but larger, wooden-hulled Sonya class went into production instead.

◆ 70 Vanya-class coastal minesweepers

Bldr: . . . (In serv. 1961-73)



Vanya class

JMSDF, 1984

D: 200 tons (245 fl) S: 14 kts Dim: $40.2 \times 7.9 \times 1.7$ A: 2/30-mm AA (II \times 1)

Electron Equipt: Radar: 1/Don-2

IFF: 1/High Pole-B, 1/Dead Duck

M: 2 diesels; 2 props; 2,200 hp Range: 1,400/14; 2,400/10 Man: 30 tot.

Remarks: Soviet type designation: BT—Basovyy Tral'shchik (Base Minesweeper). Wooden construction. At least one was built or has been converted as a minehunter, armed with two 25-mm AA (II × 1)—more accurate than 30-mm for mine-disposal—and with one Don-Kay in place of Don-2; has two boats in davits on the fantail. The last half-dozen or so built, classed Vanya-II, are one meter longer, have a larger diesel generator exhaust pipe amidships, and have heavier davits at the stern.

Note: All units of the Sasha-class coastal minesweeper design are believed to have been stricken.

 45 Yevgenya-class inshore minesweepers pino (In serv. 1970- . . .) Bldr: Svedniy Neva SY, Kol-



Yevgenya class

M.O.D., Bonn, 1982

D: 80 tons (90 fl) S: 11 kts Dim: 26.2 × 6.1 × 1.5 A: 2/14.5-mm mg (II × 1) M: 2 diesels; 2 props; 600 hp Electron Equipt: Radar: 1/Spin Trough — IFF: 1/High Pole-B Range: 300/10 Man: 10 tot.

Remarks: Glass-reinforced plastic hull. More built for export than retained by Soviet Navy. Some foreign ships have two 25-mm AA (II × 1). Employs a television mine-hunting system that dispenses marker buoys to permit later disposal of mines useful to 30-m depths.

• 2 Andryusha-class special minesweepers

Bldr: . . . (In serv. 1975-76)



D: 320 tons (360 fl) S: 15 kts Dim: 47.8 × 8.5 × 3.0 A: None Electron Equipt: Radar: 1/Spin Trough—IFF: 1/High Pole-B M: 2 diesels; 2 props; 2,200 hp Man: 40 tot.

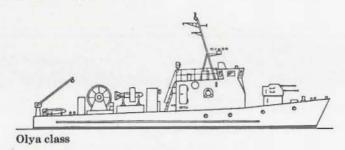
Bldr: . . . SY, Poland

MINE WARFARE SHIPS (continued)

Remarks: Wooden or plastic hulls. Large cable ducts running down both sides indicate probable role in sweeping magnetic mines. Prominent stack for gas-turbine generator; diesel engines exhaust through hull sides. No armament.

♦ 4 Olya-class minesweeping boats

Bldr: . . . (In serv. 1976-)



D: 44 tons (50 fl) S: 18 kts Dim: 24.6 × 4.2 × 1.0 A: 2/25-mm AA Electron Equipt: Radar: 1/Spin Trough M: 2 diesels; 2 props; 600 hp Range: 500/10 Man: 15 tot.

* 11 Ilyusha-class minesweeping drones (In serv. 1970- . . .)



Ilyusha class

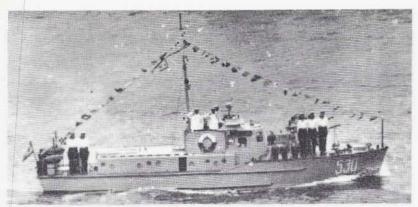
1977

D: 80 tons (85 fl) S: 12 kts Dim: 26.2 × 5.8 × 1.5 A: None Electron Equipt: Radar: 1/Spin Trough—IFF: 1/High Pole-B M: 1 diesel; 450 hp Man: 10 tot.

Remarks: Apparently radio-controlled while operating, but can be manned for transit.

Stream sweep arrays through five chocks over stern; may be line-charge mine-disposal laying systems.

 26 K-8-class minesweeping boats serv. 1954-59)
 Bldr: Polnocny SY, Gdansk, Poland (In



K-8 class

D: 19.4 tons (26 fl) S: 12 kts Dim: 16.9 × 3.2 × 0.8 A: 2/14.5-mm mg (II × 1) Electron Equipt: None M: 2 3D6 diesels; 2 props; 300 hp Range: 300/9 Man: 6 tot.

Remarks: Wooden construction. Tow, but do not carry, wire sweep or self-powered solonoid arrays. Long overdue for replacement.

 25 Polish TR-40-class river minesweepers (1950s)

D: 50 tons (70 fl) S: 16 kts Dim: $28.0 \times 4.1 \times 0.70$ A: 2/25-mm AA (II \times 1) -2/14.5-mm mg (II \times 1) — mines Electron Equipt: Radar: none — IFF: 1/High Pole-A

M: 2 diesels; 2 props; 600 hp Man: 16 tot.

Remarks: Wooden construction. Overdue for replacement.

♦ 1 or more Baltika-class auxiliary minesweepers

Bldr: Leninskaya Kuznitsa SY, Kiev (In serv. 1978- . . .)

D: 210 tons (fl) S: 9.5 kts Dim: 25.30 (22.00 pp) × 6.80 × 2.45

A: None Electron Equipt: Radar: 1/Navigational Range: 2,200/9.5 M: 1 ChISP 18/22 diesel; 1 CP prop; 300 hp Electric: 25 kw Man: 5-10

Remarks: 108 grt/145 nrt. A small stern-haul purse-seiner fishing boat acquired circa 1980-81, apparently for testing the feasibility for rapid conversion of the several hundred civil craft of this class to simple wire-sweep minesweepers in time of war.

several dozen non-self-propelled mine countermeasures craft



Towed mine countermeasures craft

1977

Remarks: Apparently a towed equivalent to the Ilyusha class, with an internal cable reel and winch to deploy magnetic sweep arrays or explosive line-charge arrays. Helicopters tow a modified "Volga"-class sports hydrofoil, equipped with noise and electric field generators.

Note: Several Polnocny-class landing ships are equipped to deploy a pair of remotecontrolled motor boats that tow line-charge cable to destroy or countermine shallowwater beach obstacle mines; see under amphibious warfare entries.

AMPHIBIOUS WARFARE SHIPS

♦ 2 Ivan Rogov-class landing ships Bldr: Kaliningrad SY

| L | In serv. | Ivan Rogov | 1976 | 1978 | Aleksandr Nikolayev | . . . | 11-82

D: 11,000 tons (13,000 fl) S: 23 kts Dim: $158.0 \times 24.0 \times 8.2$ A: 1/SA-N-4 SAM syst. (II \times 1, 20 missiles) -2/76.2-mm DP (II \times 1) -A. Nikolayev only: 2/SA-N-5 SAM syst. (IV \times 2; . . . Grail missiles) -4/30-mm gatling AA (VI \times 4) -1/122-mm automatic bombardment RL (XL \times 1) for BM-21 rockets -4/Hormone-C or Helix helicopters -3/Lebed air-cushion landing craft



Ivan Rogov — note helo spots, staggered stack locations



Ivan Rogov

French Navy, 1979

AMPHIBIOUS WARFARE SHIPS (continued)



Aleksandr Nikolayev - vehicles on forward helicopter deck

Ships of the World, 1-85

Electron Equipt: Radar: 2/Don-Kay (A. Nikolayev: Palm Frond), 1/Head Net-C, 1/Owl Screech, 1/Pop Group, 2/Bass Tilt EW: 2 (A. Nikolayev: 3)/Bell Shroud, 2/Bell Squat IFF: High Pole-B (A. Nikolayev: Salt Pot B)

M: 2 gas turbines; 2 props; 50,000 hp

Range: 8,000/20; 12,500/14 Man: 200 crew + 550 troops

Remarks: Soviet type designation: BDK — Bol'shoy Desantnyy Korabl' (Large Landing Ship). The second unit apparently suffered construction delays. Equipped with bow doors and articulating ramp leading to a vehicle cargo deck in the forward part of the hull, while a stern door provides access to a floodable docking well intended to accommodate up to 3 Lebed air-cushion landing craft or 6 Ondatra-class landing craft. The massive superstructure incorporates a helicopter hangar, with a steep ramp leading downward to a helicopter pad on the foredeck, and doors aft leading to a second helicopter platform over the stern. There are also hydraulically raised ramps leading from the upper deck forward of the superstructure to both the bow doors and the docking well. Capable of transporting an entire naval infantry battalion and its vehicles, including 10 tanks, 30 armored personnel carriers, and trucks. The ability to use helicopters, to beach, and to deploy air-cushion vehicles gives a versatility unmatched by any other amphibious-warfare ship; this is combined with an organic shore-firebombardment capability and very extensive command, control, and surveillance facilities. The hull has a pronounced bulb, or beak, projecting forward below the waterline. During 1982-83, both were in the Baltic, with A. Nikolayev deploying to the Pacific late 1983. Both have a Squeeze Box optronic device atop the bridge.

 17 Ropucha-class tank landing ships (In serv. 1975-78, 1982-84) Bldr: Polnocny SY, Gdansk, Poland



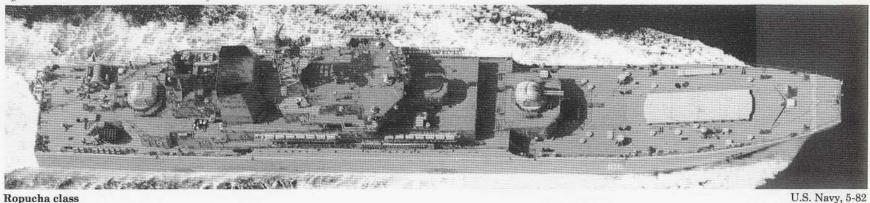
Ropucha class-showing stern door

French Navy, 9-82

24 Flot., French Navy, 7-84



Ropucha class-late version, with curved hances to first superstructure deck; note saluting cannon on deck, abaft empty rocket launcher pedestals.



Ropucha class

D: 2,200 tons (3,200 fl) S: 18 kts Dim: 113.0 × 14.0 × 2.9 (aft)

A: 4/57-mm AA (II × 2) — some: 4/SA-N-5 syst. (IV × 4; 32 SA-7 Grail Missiles)

Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Muff Cob IFF: 1/High Pole-B

M: 2 diesels; 2 props; 10,000 hp Range: 3,500/16

Man: 70 crew + 230 troops

Remarks: Soviet type designation: BDK - Bol'shoy Desantnyy Korabl' (Large Landing Ship). Bow and stern doors permit roll-on/roll-off loading. Cargo capacity: 450 tons; usable deck space: 600 m2. The later units have angled hances to the corners of the main-deck superstructure and reinforcing gussets around the forward 57-mm AA platform. Several have received 4/SA-N-5 quadruple launchers for Grail SAMs. Although the class was intended to receive two barrage rocket launchers on the forecastle, none have been installed. One unit was transferred to the People's Democratic Republic of Yemen in 1979. A second series of six identical in nearly all respects to later units of the first, was completed in 1982-84.

♦ 14 Alligator-class tank landing ships 1964-77)

Bldr: Kaliningrad SY (In serv.

ALEKSANDR TORTSEV* Donetskiy Shakhter* ILYA AZAROV*

Krasnaya Presnya*

Komsomolets Kareliyy

KRYMSKIY KOMSOMOLETS' NIKOLAY FIL'CHENKOV* NIKOLAY VILKOV* NIKOLAY OBYEKOV

SERGEI LAZO Tomskiy Komsomolets VORONEZHSKIY KOMSOMOLETS 50 Let Shefstva V.L.K.S.M.*

D: 3,400 tons (4,700 fl) **S:** 18 kts **Dim:** $112.8 \times 15.3 \times 4.4$ (aft)

PETR IL'ICHYEV*

A: 2/57-mm AA (II × 1—N. Fil'chenkov, N. Vilkov also: 4/25-mm AA (II × 2) starred units: 1/BM-21, 122-mm RL (XL × 1)

Electron Equipt: Radar: 2/Don-2 and/or Spin Trough IFF: 1/High Pole-B

M: 2 diesels; 8,000 hp Range: 9,000/16; 14,000/10

Man: 75 crew + 300 troops

Remarks: Soviet type designation: BDK—Bol'shoy Desantnyy Korabl' (Large Landing Ship). The design evolved continually during the time these ships were built. They have ramps fore and aft. Their hoisting equipment varies (one or two 5-ton cranes, one 15-ton crane), as does their armament: later ships also have a BM-21, 40-tubed, 140-mm rocket launcher forward for shore bombardment, the last two have four



Alligator class-late unit with 122-m rocket launcher forward, 3/SA-N-5 launchers French Navy, 4-83



Voronezhskiy Komsomolets—early unit updated with SA-N-5 U.S. Navy, 2-84



Soviet 140-mm barrage rocket launcher with two clusters of 20 rocket tubes loaded; empty tubes are discarded and two new sets automatically reloaded from below after firing

25-mm AA (II × 2) aft, and some are equipped with 3/SA-N-5 launchers for SA-7 Grail (IV × 3). Cargo capacity is about 600 tons for beaching, twice that in freighting service; can carry about two dozen tanks, plus lighter vehicles on upper decks.

 40 Polnocny-class medium landing ships Poland (In serv. 1961-73)

Bldr: Polnocny SY, Gdansk,

7 A version:



Polnocny-A-with original low bridge troughs down sides of hull, davits for linecharge towing boats are mounted before the bridge



Polnocny-A - with four SA-N-5 quadruple launchers

AMPHIBIOUS WARFARE SHIPS (continued)

D: 770 tons (fl) S: 19 kts Dim: 73.0 × 8.6 × 1.9 (aft)

2/14.5-mm mg (II \times 1) or 2/30-mm AA (II \times 1) or none -2/140-mm barrage RL (XVIII \times 2) -0 or 4/SA-N-5 systems (IV \times 0, 2, 4; up to 32 SA-7 Grail)

Electron Equipt: Radar: 1/Spin Trough IFF: 1/High Pole-A; Some: 1/Square Head

M: 2 diesels; 2 props; 5,000 hp Range: 900/18; 1,500/14 Man: 35 tot.

24 B version:



Polnocny-B-with high stack and 30-mm AA aft, 4/SA-N-5 launchers

1977



Polnocny-B class - with 4/SA-N-5 systems, no 30-mm aft

U.S. Navy, 8-83



Polnocny-B-with side troughs for line charges and two chutes at the stern for launching the tow boats; unit also has four SA-N-5 launchers JMSDF, 8-84

D: 800 tons (fl) S: 18 kts Dim: 74.0 × 8.6 × 2.0

A: 2 or 4/30-mm AA - 2/140-mm barrage RL (XVIII × 2) - 4/SA-N-5 systems (IV × 4; 32 SA-7 Grail)

Electron Equipt: Radar: 1/Spin Trough, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole-B

M: 2 diesels; 2 props; 5,000 hp Range: 900/18; 1,500/14 Man: 40 crew + 100 troops

D: 1,150 tons (fl) S: 18 kts Dim: $81.3\times10.1\times2.1$ A: 4/30-mm AA (II × 2) — 2/140-mm barrage RL (XVIII × 2) — 4/SA-N-5 systems (IV × 2, 32 SA-7 Grail missiles)

Electron Equipt: Radar: 1/Spin Trough, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole-B

M: 2 diesels; 2 props; 5,000 hp Range: 1,800/18; 3,000/14

Man: 40 crew, plus 180 troops

Remarks: Soviet type designation: SDK - Srednyy Desantnyy Korabl' (Medium Landing Ship). Most have now been equipped with two or four SA-N-5 systems. The Polnocny-Bs that have 30-mm aft have heightened stacks. This class delivered to India, Iraq, Indonesia, Egypt, Angola, etc. Cargo: about 180 tons in A and B, 250 tons in C. "Trough unit" Polnocny-A and -B are line-charge layers for beach-defense minefield clearance; they carry two small remote-controlled motor boats to tow the line charges. "A" version has convex bow form; "B" has concave bow-flare; "C" is longer and has additional accommodations. Numbers of "A"-version declining through strikings, while "B"s continue to be transferred to Soviet clients.



Polnocny-C-longer hull and superstructure

French Navy, 10-83

AMPHIBIOUS LANDING CRAFT

♦ 16 Vydra-class utility landing craft

Bldr: U.S.S.R. (In serv. 1967-69)



Vydra class

D: 425 tons (600 fl) S: 12 kts Dim: 54.9 × 7.6 × 2.0 A: None

Electron Equipt: Radar: 1/Spin Trough IFF: 1/High Pole

M: 2 diesels; 2 props; 800 hp Range: 1,900/11.9; 2,700/10

Man: 20 crew, plus 100 troops

• 1 (+ . . .) Tsaplya-class air-cushion landing craft Bldr: . . . (In serv.

D: 90 tons (fl) S: . . . Dim: . . . × . . . × . . . A: . . . M: . . .

Remarks: Class reportedly can carry one amphibious tank plus 80 troops, or 160 troops, or 25 tons of stores. Appears to be a Lebed successor.

♦ 2 (+ . . .) Utenok-class air-cushion vehicles

Bldr: Feodosiya SY (In serv.

D: . . . S: . . . Dim: 26.3 × 13.0 × . . . A: 4/30-mm AA (II × 2) M: . . .

Remarks: Can carry one 45-ton T-72/T-80 tank.

• 20 Lebed-class surface-effects landing craft

Bldr: . . .



Lebed class

M.O.D., Bonn, 1982

AMPHIBIOUS LANDING CRAFT (continued)



Lebed class

D: 85 tons (fl) S: 70 kts Dim: 24.8 × 10.8 × . . .

A: 2/14.5-mm mg (II × 1) M: 3 gas turbines; 2 props Range: 100/65; 250/60

Remarks: Broad bow ramp, ducted props, control cab to starboard, gunmount atop. Can carry one or two PT-76 light tanks or 120 troops or about 45 tons of cargo.

* 17 Aist-class surface-effects landing craft grad (In serv. 1971- . . .)

Bldr: Dekabristov SY, Lenin-



Aist class - on cushion

1978



Aist class - at rest

M.O.D., Bonn

D: 250 tons (fl) S: 80 kts Dim: 47.3 × 17.4 × 0.3

A: 4/30-mm AA (II × 2)

Electron Equipt: Radar: 1/Spin Trough, 1/Drum Tilt

IFF: 1/High Pole-B, 1/Square Head M: 2 gas turbines; 4 props; 2 lift fans Range: 100/65; 350/60

Remarks: Can carry four PT-76 light tanks or one medium tank and 220 troops. Recent units carry 2/SA-N-5 SAM syst. (IV × 2) and chaff RL (XVI × 2)

30 Gus-class surface-effects landing craft (In serv. 1970-74)



Gus class

1970

D: 27.2 tons (fl) **S**: 60 kts **Dim**: $21.3 \times 7.1 \times 0.2$ A: None M: 3 gas turbines; 2 props; 1 lift fan; 2,340 hp Range: 185/50; 200/43

Remarks: Can carry twenty-four troops. A training version with two pilot positions is also in service.

♦ 16 (+ . . .) Ondatra-class landing craft (In serv. 1978- . . .)

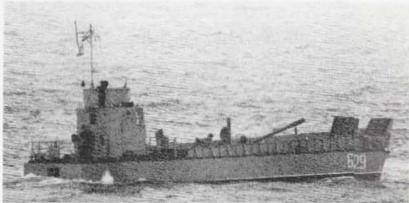


Ondatra class

D: 90 tons (140 fl) S: 10 kts Dim: 24.2 × 6.0 × 1.5 A: None M: 2 diesels; 2 props; 600 hp Man: 4 tot.

Remarks: Apparently intended as successor to the T-4 class. One carried by Ivan Rogov as a tug for Lebed-class air-cushion vehicles. In lieu of Lebed, Rogov can carry 6 Ondatra. Cargo well is 15-m × 3.8-m.

. . T-4-class landing craft (In serv. 1954-74)



T-4 class - later, deep-bowed version

D: 70 tons (fl) S: 10 kts Dim: 19.0 × 4.3 × 1.0 M: 2 diesels; 2 props; 600 hp Man: 5 tot.

Remarks: Built in two versions; later variant with deeper bow could accommodate a medium tank.

SUBMARINE TENDERS

• 6 Ugra-class command tenders 1963-72)

Bldr: Black Sea SY, Nikolayev (In serv.

IVAN KOLYSHKIN

IVAN KUCHERENKO

IVAN VAKHRAMEEV

TOBOL

VOLGA N. . . .

D: 6,750 tons (9,600 fl) S: 17 kts Dim: 145.0 × 17.7 × 6.4

A: 8/57-mm AA (II × 4)

Electron Equipt: Radar: 1-3 Don-2, 1/Strut Curve, 2/Muff Cob

EW: 4/Watch Dog

IFF: 1/High Pole-B, 1/High Pole-A, 2/Square Head

M: 4 diesels; 2 props; 8,000 hp Range: 21,000/10 Man: 450 tot.



Ivan Kolyshkin - helicopter hangar aft

SUBMARINE TENDERS (continued)



The unnamed Ugra-with 2/SA-N-5 launchers before the stack French Navy, 1-83

Remarks: Soviet type designation: PB—Plavuchaya Baza (Floating Base). One modified version was built for India, as Amba. The Ivan Kolyshkin has a tall helicopter hangar. Ivan Kucharenko and Volga have a Vee Cone HF communications antenna. Can support eight to twelve submarines at sea with supplies, fuel, provisions, water, and spare torpedoes and can offer repair services. Being backfitted with 2/SA-N-5 syst. (IV × 2, SA-7 Grail missiles). This class and the Don class are frequently used as flagships. One 10-ton and two 6-ton cranes are fitted. Sisters Gangut and Borodino are configured as training ships for naval officer cadets and do not serve submarines—see Training Ships.

♦ 6 Don-class command tenders Bldr: Black Sea SY, Nikolayev (In serv. 1958-61)

DMITRIY GALKIN KAMCHATSKIY KOMSOMOLETS MAGOMED GADZIEV FYODOR VIDYAEV MAGADANSKIY KOMSOMOLETS VIKTOR KOTEL'NIKOV

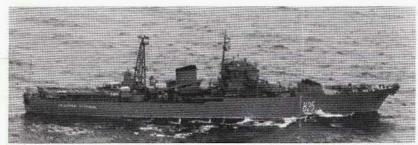
D: 6,730 tons (9,000 fl) S: 17 kts Dim: $140.0 \times 17.7 \times 6.4$ A: 4/100-mm AA (I \times 4) — 4/57-mm AA (II \times 2) — see Remarks Electron Equipt: Radar: 1-2/Don-2, 1/Slim Net, 1/Sun Visor, 2/Hawk Screech — see Remarks

EW: 2/Watch Dog IFF: 1/High Pole-B, 2/Square Head

M: 4 diesels; 2 props; 8,000 hp Range: 21,000/10 Man: 450 tot.



Fyodor Vidyaev—Vee Cone communications antenna aft, 8/25-mm AA; Echo-II alongside French Navy, 1981



Magadanskiy Komsomolets -- no 100-mm guns, large helo deck JMSDF, 4-83



Dmitriy Galkin - Vee Cone aft, lattice foremast, no 25-mm AA French Navy, 1-84



Viktor Kotel'nikov — helicopter platform aft, 2/100-mm guns forward, Big Ball SATCOMM radomes French Navy, 5-84

Remarks: Soviet type designation: PB—Plavuchaya Baza (Floating Base). Can serve as logistic support for a flotilla of eight to twelve submarines. Viktor Kotel'nikov's after 100-mm mounts were replaced by a helicopter platform, while the Magadanskiy Komsomolets has always had a very large helicopter platform aft and has never carried any 100-mm guns. Fyodor Vidyaev has eight 25-mm (II × 4) also, but no Hawk Screech; she and Dmitriy Galkin have been fitted with a Vee Cone antenna for longrange communications. A bow lift-hook of 100-ton capacity is fitted, as are one 10-ton, two 5-ton, and two 1-ton cranes. All are used as flagships. One other unit was transferred to Indonesia.

• 6 Atrek class Bldr: Neptunwerft, Rostock, East Germany (In serv. 1955-57)

ATREK BAKHMUT EVGENIY OSIPOV AYAT DVINA MURMAT



Atrek 1970

D: 3,413 tons (5,386 fl) S: 13 kts Dim: $102.4 \times 14.4 \times 5.5$ M: 1 triple-expansion engine, 1 exhaust turbine; 1 prop; 2,400 hp Electron Equipt: Radar: 1/Neptune or Don-2 Boilers: 2 Range: 6,900/13

Remarks: Soviet type designation: PB—Plavuchaya Baza (Floating Base). Modified Kolomna-class cargo ships. Can carry six 37-mm AA (II \times 3). Two 5-ton cranes forward. None sighted deployed since early 1970s; believed relegated to harbor service. Can accommodate several hundred submarine crew members.

MISSILE TRANSPORTS

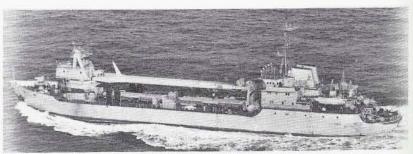
Daugava

♦ 3 Amga class Bldr: Krasnoye Sormovo SY, Gorkiy

Amga (In serv. 1973) Vetluga (In serv. 1976) Daugava (In serv. 1981)



Vetluga JMSDF, 1976



JMSDF, 1981

MISSILE TRANSPORTS (continued)

D: 4,500 tons (5,500 fl) S: 12 kts Dim: 102.0 × 17.7 × 4.4 (see remarks)

A: 4/25-mm AA (II × 2)

Electron Equipt: Radar: 1/Don-2-IFF: 1/High Pole-B

M: 2 diesels; 2 props; 4,000 hp Range: 4,500/12

REMARKS: One 55-ton crane with a reach of 34 meters. Have ice-reinforced hulls. Intended to transport ballistic missiles for strategic submarines. The *Vetluga* is 6-m longer than her sister, and *Daugava* is 113.0 long, displacing 6,200 tons (fl), and has a different crane, with solid sides. *Vetluga* and *Daugava* in Pacific Fleet.

♦ 7 Lama class Bldr: Black Sea SY, Nikolayev (In serv. 1963-79)

General Riyabakov PB 868 PM 946

VORONEZH (PM 872) PM 150 PM 938 PM. . .

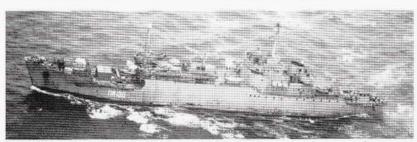
D: 4,500 tons (fl) S: 14 kts Dim: 112.8 × 14.9 × 4.4

A: 4 or 8/57-mm DP (IV \times 1 or 2, or II \times 2) — 2 or 4/SA-N-5 SAM syst. (IV \times 4, 16 or 32 SA-7 Grail missiles) — Voronezh & one other also: 4/25-mm AA (II \times 2) Electron Equipt: Radar: 1/Don-2, 1/Slim Net or Strut Curve, 1 or 2/Hawk Screech or 2/Muff Cob

IFF: 1/High Pole-B, 2/Square Head

M: 2 diesesls; 1 prop; 4,000 hp

Remarks: PM — Plavuchaya Masterskaya (Floating Workshop) and PB — Plavuchaya Baza (Floating Base). Vary greatly in equipment. Intended to transport cruise missiles for submarines and surface units. Voronezh (PM 872) and one other have larger missile-stowage areas and smaller cranes, and carry two open 57-mm DP (II × 1; one only on Voronezh), and four 25-mm AA (II × 2), but have no fire-control radar. These serve Nanuchka-class corvettes and Osa-class patrol boats. Two 20-ton (10-ton on missile-boat tenders) precision cranes. General Ryabakov, completed 1979, has an enclosed, automatic 57-mm AA mount and four SA-N-5 systems.



PM-150 — with twin 57-mm DP forward, 2/SA-N-5 launchers abreast stack



General Riyabakov — with twin 57-mm DP, 4/SA-N-5 launchers aft French Navy, 10-83

◆ 2 Modified Andizhan class serv. 1960-61) Bldr: Neptunwerft, Rostock, Each Germany (In

VENTA VILYUY



Vilyuy

U.S. Navy, 6-83

D: 6,740 tons (fl) **S:** 13.5 kts **Dim:** $104.0 \times 14.4 \times 6.6$

A: None Man: 60 tot.

Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-B, 1/Square Head

M: 1 diesel; 1 prop; 1,890 hp Range: 6,000/13.5

REMARKS: Converted from cargo ships during the 1970s. Large crane forward, two small cranes and a helicopter deck aft. Forward holds can accommodate ten SS-N-9 missiles and twenty SA-N-1 or SA-N-3. Helicopter pad aft.

◆ 2 MP 6 class Bldr: Hungary (In serv. 1959-60)

Bureya Khoper

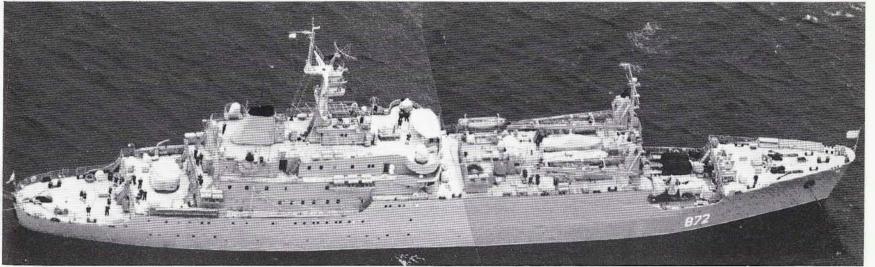


Bureya-long forward hatch to missile hold

1982

D: 2,100 tons (fl) S: 10.5 kts Dim: $74.7 \times 11.3 \times 4.4$ Electron Equipt: Radar: 1/Don-2 M: 1 diesel; 1 prop; 1,000 hp Range: 3,300/9

Remarks: Former medium landing ships, resembling engines-aft coastal freighters. Bow doors welded shut circa 1960, when they were adapted as cargo vessels. Subsequently modified to transport SS-N-5 ballistic missiles. *Khoper* in the Northern Fleet and *Bureya* in the Pacific.



Voronezh (PM-872) - missile-boat-tender version with forward twin 57-mm DP removed, 2/SA-N-5 added abreast stack

MISSILE TRANSPORTS (continued)

◆ 2 Melitopal class Bldr: . . . , U.S.S.R. (In serv. 1952-55)

Indirka Fort Sheverenko

D: 1,200 tons (fl) S: 11.3 kts Dim: 57.6 × 9.0 × 4.3 Electron Equipt: Radar: 1/Don-2 Range: 2,500/10.5

M: 1 Type 6DR 30/40 diesel; 1 prop; 600 hp

Remarks: Converted late 1970s from small, engines-aft coastal cargo vessels. Have one long hold. All cargo-handling gear removed. In Baltic Fleet. Three sisters serve as survey vessels.

Note: Muna-class ammunition transports are described on a later page.

REPAIR SHIPS

Note: According to the Polish press in 1-85, a new series of "floating repair shops" is to be built at Wisla Shipyard, Gdansk, for the Soviet Navy. No data available.

♦ 2 Malina class

Bldr: Black Sea SY, Nikolayev

PM-63 (In serv. 1984)

PM-74 (In serv. 1985)



PM-63

French Navy, 9-84



PM-63

U.S. Navy, 10-84

D: 10,000 tons (fl) S: 17 kts Dim: 140.0 (126 wl) × 22.0 × 5.0

A: None

Electron Equipt: Radar: 2/Palm Frond — IFF: 1/Salt Pot transponder

M: 4 gas turbines; 1 or 2 props; 60,000 hp Man: 260 tot.

Remarks: PM—Plavuchaya Masterskaya (Floating Workshop). Second unit began trials in the spring of 1985. Unusual hull form with no curved surfaces, indicates not

intended to move very often. Intended to serve nuclear-powered submarines, as evidenced by the mooring pockets along the hull sides and the two large, specialized reactor recornig cranes. PM-74 to Pacific Fleet, late 1985.

24 Amur class Bldr: A. Warski SY, Szczecin, Poland (In serv. 1968-78, 1981-83)

| PM-5 | PM-34 | PM-52 | PM-75 | PM-129 | PM-156 |
|-------|-------|-------|-------|--------|--------|
| PM-9 | PM-37 | PM-56 | PM-81 | PM-138 | PM-161 |
| PM-10 | PM-40 | PM-64 | PM-82 | PM-139 | PM-163 |
| PM-15 | PM-49 | PM-73 | PM-94 | PM-140 | PM-164 |

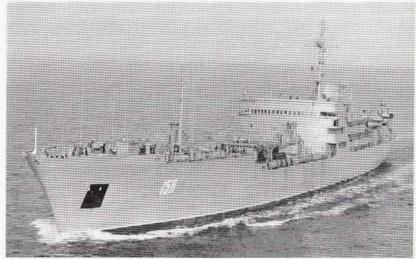
D: 4,000 tons (5,490 fl) **S:** 12 kts **Dim:** $121.7 \times 17.0 \times 5.1$ **A:** None **Electron Equipt:** Radar: 1/Don-2

IFF: 1/High Pole-B

M: 2 diesels; 1 prop; 4,000 hp Range: 13,200/8

Man: 210 tot., plus up to 210 passengers

Remarks: PM—Plavuchaya Masterskaya (Floating Workshop). Enlarged version of the Oskol class. Two 5-ton cranes. Construction resumed 1980-82, with PM-5 of the new series having a long deckhouse in the forecastle. Early units do not have the passenger facilities. Serve surface-ships and submarines with basic repair facilities and spare parts.

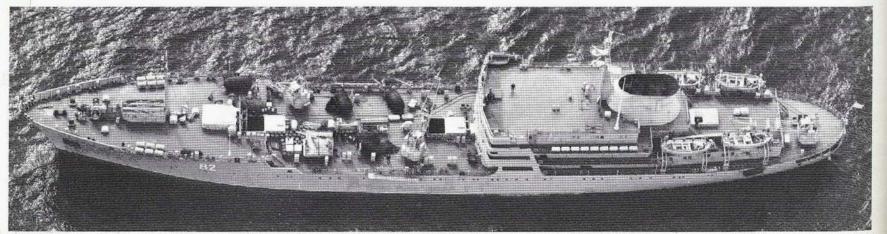


PM-156 Skyfotos, 12-84



PM-82 ("PM" omitted from pendant)

R. Neth. Navy, 2-84



PM-82

U.S. Navy, 2-84

REPAIR SHIPS (continued)

♦ 12 Oskol class Bldr: A. Warski SY, Szczecin, Poland (In serv. 1964-67)

PM-2 PM-21 PM-26 PM-51 PM-68 PM-148 PM-20 PM-24 PM-28 PM-62 PM-146 PM-477



PM-21 — well-deck Oskol class; twin 12.7-mm mg atop fwd. deckhouse



PM-24-4/25-mm AA aft

16 Flot., French Navy, 10-84



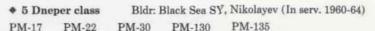
PM-146 - flush-decked Oskol class

1970

1981

D: 2,500 tons (3,000 fl) S: 12 kts Dim: 91.4 × 12.2 × 4.0 Electron Equipt: Radar: 1 or 2/Don-2—IFF: 1/High Pole-A M: 2 diesels; 1 prop; 4,000 hp Range: 9,000/8 Man: 60 tot.

Remarks: PM—Plavuchaya Masterskaya (Floating Workshop). Most have a well deck forward of the bridge. PM-24 has four 25-mm AA (II × 2); a twin 57-mm gunmount forward was removed between 1980 and 1984. All have one or two 3.4-ton cranes.





PM-17

1960

D: 4,500 tons (5,300 fl) S: 11 kts Dim: 113.3 (100.0 pp) × 16.5 × 4.4 Electron Equipt: Radar: 1/Don or Don-2—IFF: 1/High Pole-A M: 1 diesel; 2,000 hp Range: 6,000/8.3 Man: 420 tot.

Remarks: PM—Plavuchaya Masterskaya (Floating Workshop). Have one 150-ton bow hoist, one kingpost, and one crane. Equipment varies from ship to ship. PM 130 and 135, the last two units (Modified Dnepr class) are flush-decked. Intended to serve submarines. Can be armed with 2/57-mm AA (II × 1). Not seen since initial delivery voyages.

GENERATOR SHIPS

4 Tomba class Bldr: A. Warski SY, Szczecin, Poland (In serv. 1974-76)
 ENS-244 ENS-254 ENS-348 ENS-357



ENS-357

L. & L. Van Ginderen, 6-80

D: 4,400 tons (5,800 fl) S: 14 kts Dim: 107.0 × 17.0 × 5.0

Electron Equipt: Radar: 1/Don-2—IFF: 1/High Pole-B M: 1 diesel; 1 prop; 4,500 hp Range: 7,000/12 Man: 50 tot.

REMARKS: ENS—Elektrostantsiye Nativatel'noye Sudno (Electric Power Station and Steam-Source Ship). Two stacks and a "mack" on the forecastle, all containing diesel-engine exhausts, while the stack amidships also has the uptake from a large boiler. Two 3-ton cranes.

SUBMARINE RESCUE SHIPS

♦ 1 (+1) El'brus class Bldr: 61 Kommuna SY, Nikolayev EL'BRUS (In serv. 1981) N. (In serv. . . .)



El'brus

U.S. Navy, 1-82

SUBMARINE RESCUE SHIPS (continued)



El'brus

French Navy, 5-84

D: 20,000 tons (fl) S: 17 kts Dim: $175.0 \times 25.0 \times 7.5$ A: Provision for 4/30-mm gatling AA (I \times 4) or 8/30-mm AA (II \times 4) Electron Equipt: Radar: 1/Don-2, 2/Don Kay—IFF: 2/Salt Pot-C M: 4 diesels; 2 props; . . . hp Range: . . . Man: 420 tot.

Remarks: Icebreaking hull indicates probable association with the Typhoon program. Large hangar aft of stack holds two or four salvage-and-rescue submersibles, which are moved forward on rails for launching by extendable overhead gantry cranes on either side. Hangar for one Hormone or Helix helicopter, with hangar door dropping to form a ramp leading to the helicopter flight deck. Can lay and retrieve a four-point moor. The 3-ton crane on port quarter has very long folding arm. Has submersible decompression and observation chambers, firefighting equipment. Far and away the world's largest and most elaborate submarine salvage and rescue ship. El'brus made one brief deployment in 12-81 to 1-82 and then returned to the Black Sea, not emerging again until 5-84. Second unit reported building 3-83.

1 Nepa class

Bldr: Black Sea SY, Nikolayev (In serv. 1970)

KARPATY



Karpaty

1971

D: 9,800 tons (fl) S: 16 kts Dim: 129.5 × 19.2 × 6.4 A: None Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-B M: 2-4 diesels; 2 props; 8,000 hp Range: 8,000/14 Man: 270 tot.

Remarks: Has a 600-ton lift hook supported by horns extending over the stern, two others beneath the hull. Very large all-purpose salvage ship with submarine-rescue equipment, including several rescue bells and observation chambers.

♦ 8 Prut class Bldr: Nosenko/Black Sea SY, Nikolayev (In serv. 1960-68)

ALTAY VLADIMIR TREFOLEV SS-21 SS-26 BESHTAU ZHIGULI SS-23 SS-83



Zhiguli - tripod foremast, mooring buoys in chutes

1986



SS-21 — quadripod foremast, horizontally stowed mooring buoys

French Navy, 1981

D: 2,800 tons (3,300 fl) S: 20 kts Dim: 90.2 × 14.3 × 5.5 Electron Equipt: Radar: 1-2/Don-2 and/or Don M: 4 diesels; 2 props; 8,000 hp Range: 10,000/16 Man: 120 tot.

Remarks: SS—Spasitel'noye Sudno (Rescue Ship). One derrick, two or three special carriers for rescue chambers, submersible decompression chamber for divers, and salvage observation bells. Four anchor buoys are stowed on inclined racks on the after deck. One unit was armed for a while with four 57-mm AA (IV × 1) controlled by a Muff Cob radar director, long since removed. SS-21, SS-26, SS-86, Beshtau, and Vladimir Trefolev have quadripod foremasts, smaller mooring buoys; others have tripod foremasts. Sister SS-44 lost during early 1970s.

♦ 11 Modified T-58-class minesweepers Bldr: . . . (In serv. late 1950s)

KAZBEK VALDAY ZANGEZUR SS-35 SS-47 SS-51 KHIBINY POLKOVO SS-30 SS-40 SS-50



SS-40 1978

D: 815 tons (930 fl) S: 17 kts Dim: 71.7 × 9.6 × 2.7 Electron Equipt: Radar: 1/Don-2, 1/Spin Trough or Don or Don-2 Sonar: 1/Tamir—IFF: 1/High Pole-A M: 2 diesels; 2 props; 4,000 hp Range: 2,500/12 Man: 60 tot.

Remarks: SS—Spasitel'noye Sudno (Rescue Ship). Altered while under construction. Lift rig overhanging the stern to handle divers' gear and submersible decompression chamber. Rescue diving chamber to port, amidships. Can be armed with one 37-mm AA. Sister Gidrolog served as an intelligence collector until struck, early 1980s. Another was transferred to India.

FLEET REPLENISHMENT SHIPS

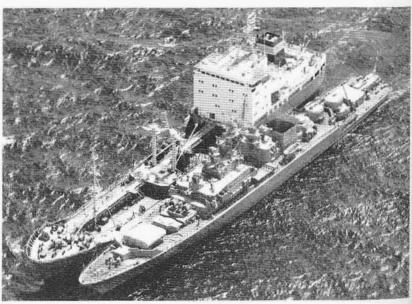
• 2 Kaliningrad class Bldr: Rauma-Repola, Finland

Vyaz'ma (ex-Katun) (In serv. 5-83) Argun (ex-Kallavere) (In serv. 7-83)

D: 8,700 tons (fl) S: 14 kts Dim: 115.5 (112.0 pp) × 17.0 × 6.5

A: None M: Radar: 1/Okean A, 1/Okean B

M: 1 Russkiy/Burmeister & Wain 5 DKRP 50/110-2 diesel; 1 prop; 3,850 hp Electric: 805 kw Range: 5,000/14 Man: 32 tot.



Argun — fueling a Krivak-II moored alongside Lt. Weaver/CLDR Fenzl, VF-111, U.S.N., 5-83

FLEET REPLENISHMENT SHIPS (continued)



Vvaz'ma

U.S. Navy, 10-83

Remarks: 4,821 grt/5,873 dwt. Last two built of a class that had over two dozen units delivered to the U.S.S.R. Ministry of Fisheries from 1979 to 1982. Originally completed 12-82 and 11-82, respectively. Three liquid replenishment stations (one each side, plus astern); no underway solids replenishment. Carry 5,750 m³ (5,350 tons) liquid cargo in 10 tanks, 80 m³ dry cargo. Two cargo pumps have combined 400 m³/hr capacity. Have a 1,600-ton water ballast capacity.

♦ 1 Berezina class

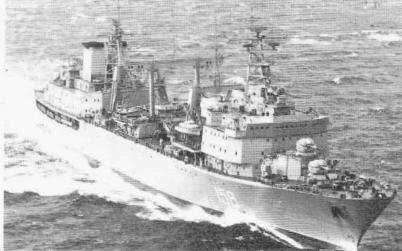
Bldr: 61 Kommuna SY, Nikolayev (In serv. 1978)

BEREZINA



Berezina

10-81



Berezina

U.S. Navy, 1979

D: 36,000 tons (fl) S: 22 kts Dim: 212.0 × 26.0 × 10.0

A: 1/SA-N-4 system (II \times 1, 20 missiles) -4/57)mm DP (II \times 2) -4/30-mm gatling AA (VI \times 4) -2/RBU-1000 ASW RL (VI \times 2) -2/Hormone helicopters

Electron Equipt: Radar: 1/Don-2, 2/Don-Kay, 1/Strut Curve, 1/Pop Group, 1/Muff Cob, 2/Bass Tilt

Sonar: . . . — IFF: 1/High Pole EW: 2/chaff RL (II \times 2)

M: 2 diesels; 2 props; 54,000 hp Range: 12,000/18 Man: 600 tot.

Remarks: Soviet type designation: VTR—Voyenyy Transport (Military Transport). The largest multipurpose underway replenishment ship yet built for the Soviets and the only one currently to be armed. Can refuel over the stern and from single constant-tension stations on either side, amidships. Solid replenishment is by two sliding-stay, constant-tension transfer rigs on either side. Vertical replenishment is by two specially configured Hormone helicopters hangared in the after superstructure. There are four 10-ton stores-handling cranes to supply ships moored alongside. Cargo: approx. 16,000 tons of fuel oil and diesel fuel, 500 tons fresh water, and 2,000–3,000 tons of provisions, munitions, and combat spares. The very large crew may be accounted for, in part, by a capability to transport crews for spare submarines, for which mooring pockets are provided along the ship's side. No additional units are expected, and Berezina has not deployed from the Black Sea in several years.

• 6 Boris Chilikin class

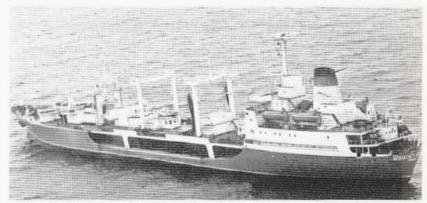
Bldr: Baltic SY, Leningrad (In serv. 1971-78)

BORIS BUTOMA BORIS CHILIKIN DNESTR GENRIKH GASANOV IVAN BUBNOV VLADIMIR KOLYACHITSKIY



Dnestr

U.S. Navy, 12-84



Genrikh Gasanov

U.S. Navy, 8-83



Boris Chilikin — with water tanker *Manych* and a Krivak-I frigate alongside U.S. Navy, 9-84

D: 8,700 tons light (24,500 fl) S: 17 kts Dim: 162.3 × 21.4 × 11.5

A: Removed

Electron Equipt: Radar: 2/Don-Kay—IFF: 1/High Pole-B

M: 1 diesel; 9,600 hp Range: 10,000/16.6

Remarks: Soviet type designation: VTR — Voyenyy Tanker (Military Tanker). Naval version of the merchant Velikiy Oktyabr class. 16,300 dwt. Equipment varies: early units had solid-stores, constant tension-rigs on both sides forward; later units, only to starboard, with liquids to port. All have port and starboard liquid-replenishment stations amidships and can replenish liquids over the stern. Cargo: 13,500 tons liquid (fuel oil, diesel, water); 400 tons ammunition; 400 tons provisions; 400 tons stores. The Ivan Bubnov and Genrikh Gasanov were completed in merchant colors, without guns, Strut Curve, or Muff Cob; that equipment has now been removed from the other ships, although several retained their gunhouses for a short period.

◆ 4 Dubna class Bldr: Rauma-Repola, Rauma, Finland

In serv. In serv.

Dubna 1974 Pechenga 1978
IRKUT 1975 Sventa 1979



Sventa

French Navy, 1984

FLEET REPLENISHMENT SHIPS (continued)



Dubna-replenishing Kresta-II Admiral Yumashev

U.S. Navy, 9-83

D: 4,300 tons light (11,100 fl)
 S: 16 kts
 Dim: 130.1 (126.3 pp) × 20.0 × 7.2
 A: None
 Electron Equipt: Radar: 2/Don-2

M: 1 Russkiy 8DRPH 23/230, 8-cyl. diesel; 1 prop; 6,000 hp

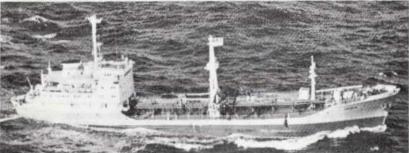
Electric: 1,485 kVA Fuel: 1,056 m3 Range: 8,000/15 Man: 60 tot.

Remarks: Soviet type designation: VTR — Voyenyy Tanker (Military Tanker). 6,022 grt/6,500 dwt. Cargo: 4,364 m³ heavy fuel oil; 2,646 m³ diesel fuel; 140 m³ cargo water; 537 m³ refrigerated provisions; 810 m³ dry stores. Twenty-seven cargo tanks. Can transfer one-ton loads from constant-tension stations forward. Liquid replenishment from one station on port and starboard, amidships, and over the stern. Additional berths for "turnover crews." Original commercial Okean-series radars replaced.

• 5 Altay class

Bldr: Rauma-Repola, Rauma, Finland (In serv. 1969-73)

ILIM IZHORA KOLA YEGORLIK YEL'NYA



Izhora

JMSDF, 1984

D: 2,183 light (2,228 fl) S: 14.2 kts Dim: 106.0 (97.0 pp) × 15.0 × 6.7 Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-A

M: 1 Valmet-Burmeister & Wain BM-550 VTBN-110 diesel; 3,250 hp (2,900 sust.)
Electric: 650 kw Range: 8,600/12 Man: 60 tot.

Remarks: 3,670 grt/5,045 dwt. All have had an underway replenishment. A-frame kingpost added forward since 1975, permitting them to refuel one ship at a time on either beam. Also able to replenish over stern. Differ in details, heights of masts, etc. More than two dozen sisters in the Soviet merchant marine.

• 1 Sofia class

Bldr: U.S.S.R. (In serv. 1969)

AKHTUBA (ex-Khanoi)



Akhtuba

1976

D: 62,600 tons (fl)
 S: 17 kts
 Dim: 230.6 × 31.0 × 11.8
 M: Steam turbine; 1 prop; 19,000 hp
 Boilers: 2
 Range: 20,900/17
 Man: 70 tot.

Remarks: 32,840 grt/49,385 dwt. Largest ship in the Soviet Navy. Carries 44,500 tons of liquid cargo. Can refuel over the stern only; primarily used to refuel other tankers.

• 3 Olekhma and Pevek class

Bldr: Rauma-Repola, Rauma, Finland

OLEKHMA IMAN ZOLOTOI ROG

D: 6,700 tons (fl) S: 14 kts Dim: 105.0 × 14.8 × 6.8

Electron Equipt: Radar: 1/Don-2 M: 1 Burmeister & Wain diesel; 2,900 hp Range: 7,900/13.6 Man: 40 tot.

REMARKS: Zolotoi Rog belongs to the Pevek class. All built in the mid-1960s. 3,300 grt/4,400 dwt. Olekhma was modernized in 1978 with A-frame abaft the bridge to permit underway fueling of one ship at a time on either beam. The other two have not



Olekhma - modified for underway replenishment

French Navy, 1979

been similarly upgraded. Predecessor to the Altay design, but with conventional "three-island" tanker layout. The Zolotoi Rog differs only slightly. All can refuel over the stern.

• 6 Uda class

Bldr: Vyborg SY (In serv. 1962-64)

DUNAY KOIDA

ENA

SHEKSNA

TEREK VISHERA



Sheksna — with two refueling positions amidships

French Navy, 5-84



Koida - still with only one bipod refueling kingpost

U.S. Navy, 2-84

D: 7,100 tons (fl) S: 17 kts Dim: 122.0 × 15.8 × 6.3 A: Removed Electron Equipt: Radar: 1/Don, 1/Don-2 (or 2/Don-2) IFF: High Pole-A

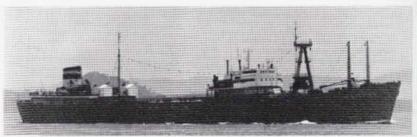
M: 2 diesels; 2 props; 8,000 hp Range: 4,000/17 Man: 85 tot.

Remarks: Soviet type designation: VTR—Voyenyy Tanker (Military Tanker). Equipped to carry eight 57-mm AA (IV × 2), Dunay, Vishera, Sheksna, and Lena have been equipped with a second A-frame kingpost for liquid replenishment, amidships. Three transferred to Indonesia during the early 1960s.

3 Kazbek class

Bldr: Admiralty SY, Leningrad, or Kherson SY

ALATYR' DESNA VOLKHOV



Alatyr'

2-84

D: 16,250 tons (fl) S: 14 kts Dim: 145.5 × 19.24 × 8.5 A: None Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-A M: 2 Russkiy Dizel diesels; 2 props; 4,000 hp Range: 18,000/14 Man: 46 tot.

REMARKS: Soviet type designation: VTR — Voyenyy Tanker (Military Tanker). Built in the mid-1950s. 8,230 grt/11,800 dwt. Carry 11,600 tons of fuel. The three naval units can be distinguished from their civilian sisters because they have two tall kingposts and an A-frame kingpost to support fueling hoses before the bridge, and working decks were added over the cargo decks before and abaft the bridge. Merchant units of this class are among those most frequently used to support naval forces.

◆ 1 ex-German, ex-Dutch Bldr: C. van der Giessen, Krimpen, Netherlands Polyarnik (ex-Kärnten, ex-Tankboot-I)

FLEET REPLENISHMENT SHIPS (continued)



Polyarnik

1975

D: 12,500 tons (fl) S: 17.1 kts Dim: 132.1 (125.0 pp) × 16.15 × 7.6 M: 2 Werkspoor 8-cyl. diesels; 2 props; 7,000 hp Man: 57 tot.

Remarks: Launched, 3-5-41. War reparations, 30-12-45. Oldest replenishment oiler in any navy. 5,709 grt/6,640 dwt. Liquid cargo 5,600 tons; solid stores and provisions. In the Pacific Fleet.

OILERS

 2 or more Baskunchak class Bldr: U.S.S.R. (In serv. late 1960s)

IVAN GOLUBETS UKHTA

> **D**: 2.940 tons (fl) **S**: 13.2 kts **Dim**: 83.6 $(74.0 \text{ pp}) \times 12.0 \times 4.9$ Electron Equipt: Radar: 1/Don-2 M: 1 Type 8DR 43/61 VI diesel; 2,000 hp Electric: 325 kw Fuel: 124 tons Range: 5,000/12.6 Man: 30 tot.

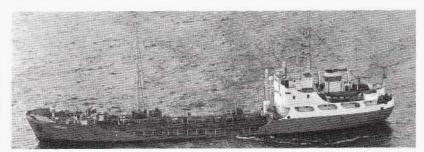
REMARKS: 1.768 grt/1.660 dwt, Cargo: 1.490 tons (9,993 bbl.). Subordinated to the KGB Maritime Border Guard, in the Pacific area. One sister, Usedom, in East German Navy; others in Soviet merchant marine.

4 Konda class

Bldr: Sweden (In serv. mid 1950s)

KONDA Rossoch'

YAKHROMA SOYANA



Yakhroma

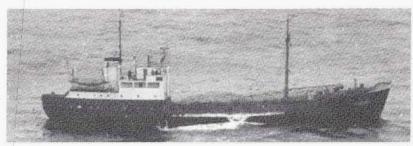
French Navy, 1981

D: 1,980 tons (fl) **S**: 12 kts **Dim**: $69.0 \times 10.0 \times 4.3$ Electron Equipt: Radar: 1-2/Don-2 and/or Spin Trough M: 1 diesel; 1,600 hp Range: 2,470/10 Man: 26 tot.

Remarks: 1,117 grt/1,265 dwt. Can refuel over the stern.

Bldr: Crichton-Vulcan or Valmet, Abo, Finland (In serv. • 3 Nercha class 1952-55)

KLYAZ'MA NARVA NERCHA



Nercha

1967

D: 1,800 tons (fl) **S:** 11.3 kts **Dim:** $63.5 \times 10.0 \times 4.5$ Electron Equipt: Radar: 1/Don M: 1 diesel; 1,000 hp Range: 2,000/10 Man: 25 tot.

Remarks: 1,081 grt/1,127 dwt. Can refuel over the stern.

13 Khobi class

Bldr: Zhdanov SY (In serv. early 1950s)

CHEREMSHAN ORSHA Sysola

INDIGA SASHA TARTU

Кнові SEIMA

LOVAT' SHELON TUNGUSKA

METAN Sos'va

D: 1,525 tons (fl) **S**: 12 kts **Dim**: $62.0 \times 10.0 \times 4.4$

Electron Equipt: Radar: 1/Don-2, 1/Spin Trough - IFF: High Pole-A

M: 2 diesels; 2 props; 1,600 hp Man: 29 tot.



Lovat

1978

Remarks: 795 grt/834-915 dwt. Refuel over bows while being towed by receiving ship. Linda and one other went to Albania in 1959; others to Indonesia. At least four have been stricken: Alazan, Baymak, Goryn, and Titan.

• 2 ex-German Dora class Bldr: D. W. Kremer Sohn, Elmshorn (In serv. 1941-43)

Izhma (ex-. . .) Iskra (ex-. . .)

D: 973 tons (fl) S: 12 kts Dim: 61.0 (56.5 pp) × 9.0 × 2.75

A: None Electron Equipt: Radar: .

M: 2 M.W.M. 6-cyl. diesels; 2 props; 900 hp Fuel: 17.5 tons

Range: 1,200/12 Man: 26 tot.

Remarks: Two of a group of four Luftwaffe aviation-fuel tankers—Dora, Else, Grete, and Hanna — all of which passed into British hands in 5-45 and went to the U.S.S.R. in 1946. The others may also remain in service. 638 grt. Cargo: 331 tons.

♦ 1 ex-German Usedom class Bldr: Howaldtswerke, Hamburg (In serv. 5-42)

Feolent (ex-Empire Tegadea, ex-Jeverland) (L: 15-6-38)

D: 5,250 tons (fl) S: 15.5 kts Dim: 96.16 × 13.8 × 5.56

A: None Electron Equipt: Radar: .

M: 2 Schichau diesels; 2 props; 3,500 hp Man: 64 tot.

Remarks: Completed by Burmeister & Wain. Turned over to Great Britain in 5-45, later to the U.S.S.R. 2,579 grt. Cargo: 2,600 tons of fuel oil. In Black Sea Fleet.

WATER TANKERS

• 2 Manych class Bldr: Vyborg SY

Manych (In serv. 1971) Tagil (In serv. 1977)



Manych

U.S. Navy, 1982



Tagil

1983

D: 7,800 tons (fl) S: 18 kts Dim: 115.8 × 15.8 × 6.7

A: Removed Electron Equipt: Radar: 2/Don-Kay; Manych also: 2/Muff Cob

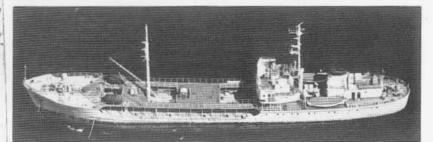
M: 2 diesels; 2 props; 9,000 hp Range: 11,500/12 Man: 90 tot.

Remarks: Originally intended to be small replenishment oilers to carry fuel and solid stores for submarines. Reported in the Soviet press as unsuccessful. Manych was assigned as a water tender to support the Mediterranean Squadron. Her four 57-mm guns were removed in 1975. Tagil was completed without armament.

WATER TANKERS (continued)

• 14 Voda class Bldr: . . . (In serv. 1950s)

ABAKAN MVT-9 MVT-17 MVT-21 MVT-138 SURA MVT-10 MVT-18 MVT-24 MVT-428 MVT-6 MVT-16 MVT-20 MVT-134



Abakan

U.S. Navy, 2-84

D: 2,100 tons (3,100 fl) S: 12 kts Dim: 81.5 × 11.5 × 4.3

Electron Equipt: Radar: 1/Don-2 M: 2 diesels; 2 props; 1,600 hp Range: 3,000/10 Man: 40 tot.

Remarks: MVT-Morskoy Vodnyy Tanker (Seagoing Water Tanker). Several have no working deck over the cargo tank area.

SPECIAL-LIQUIDS TANKERS

♦ 1 Ural class Bldr: Dalzavod SY, Vladivostok (In serv. 1969)
URAL



Ural

1969

D: 2,600 tons (fl) S: 12 kts Dim: $90.0 \times 10.0 \times 3.7$ Electron Equipt: Radar: 1/Spin Trough M: 2 diesels; 1 prop; 1,200 hp

Remarks: Transports liquid nuclear waste. High freeboard, superstructure aft, traveling crane.

♦ 6 Luza class Bldr: Sredniy Neva SY, Kolpino (In serv. 1960s)

Alambay Barguzin Kana Aragvy Don Selenga



Barguzin

1989

D: 1,900 tons (fl) S: 12 kts Dim: 62.5 × 10.7 × 4.3 Electron Equipt: Radar: 1/Don-2 M: 1 diesel; 1,000 hp Range: 2,000/11

Remarks: Carry volatile liquids, probably missile fuel. Three sisters have been stricken: Oka, Sasima, and Yenisey.

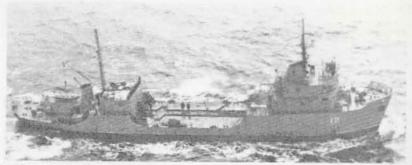
• 5 Vala class (In service: early 1960s)

TNT-11 TNT-12 TNT-19 TNT-29 TNT-. . .

D: 3,100 tons (fl) S: 14 kts Dim: 76.2 × 12.5 × 5.0

M: 1 diesel; 1,000 hp Range: 2,000/11

Remarks: Carry waste liquids from nuclear-propulsion plants. Some carry 2/12.7-mm mg (II \times 1).



TNT-12, Vala class

TRANSPORT

 1 Mikhail Kalinin class many (In serv. 1963) Bldr: Mathias Thesen Werft, Wismar, East Ger-

Kuban (ex-Nadezhda Krupskaya)



Kuban

French Navy, 1984

D: 6,400 tons (fl) S: 18 kts Dim: 122.2 × 16.0 × 5.1

A: None Electron Equipt: Radar: 2/Don-2 M: 2 M.A.N. 6-cyl. diesels; 2 props; 8,000 hp

Range: 8,100/17

Remarks: Former passenger-cargo ship used to rotate crews on ships in the Mediterranean Squadron. 5,260 grt/1,354 dwt. Can carry 340 passengers, 1,000 tons of dry cargo.

CARGO SHIPS

Note: Cargo ships are usually referred to as VTR—Voyenyy Transport (Military Transport).

♦ 7 (+ . . .) Neon Antonov class

Bldr: . . . (In serv. 1978-. . .)

IRBIT MIKHAIL KONOVALOV IVAN ASDNEV NEON ANTONOV Nikolay Sipyagin Nikolay Starshinkov

IVAN LEDNEV



Mikhail Konovalov

5-83

D: 5,200 tons (fl) S: 16 kts Dim: 95,1×14.7×6.5 Electron Equipt: Radar: 2/Palm Frond—IFF: 1/High Pole-B A: None (see remarks) M: 1 diesel; 1 prop; . . . hp

Remarks: Specialized supply ships for remote garrisons of the KGB Maritime Border Guard in the Pacific area. Carry one or two small landing craft aft. Position for a twin 30-mm AA on the forecastle, two twin 14.5-mm machine guns amidships, and two SA-7 Grail launching positions. Irbit is naval-subordinated.

• 1 Amguema class

Bldr: U.S.S.R. (In serv. 1975)

YAUZA

CARGO SHIPS (continued)



D: 15,100 tons (fl) S: 15 kts Dim: 133.1 × 18.9 × 9.1 Electron Equipt: Radar: 2/Don-2-IFF: 1/High Pole-A

M: 41,800-hp diesels, electric drive; 1 prop; 7,200 hp Range: 10,000/15

Remarks: 7,900 grt/9,045 dwt. Icebreaking passenger-cargo ship. Cargo: 6,600 tons. Numerous merchant sisters.

 4 Yuniy Partizan class Bldr: Turnu-Severin SY, Romania (In serv. 1975-78)

PECHORA PINEGA TURGAY UFA



11-80 Turgay

D: 3,947 tons (fl) S: 12.9 kts Dim: 88.75 (80.25 pp) × 12.8 × 5.2 A: None Electron Equipt: Radar: 1/Don-2-IFF: 1/High Pole-A M: 1 Sulzer diesel; 1 prop; 2,080 hp Range: 4,000/12 Man: 25 tot.

REMARKS: 2,079 grt/2,150 dwt. Small container ships. Three 10-ton cranes, one of which can be rigged to lift 28 tons. Cargo: 3,200 m3. Originally intended to be able to carry fifty-eight standard cargo containers. Twenty sisters are civilian.

• 8 Vytegrales class

APSHERON (ex-Tosnales) BASKUNCHAK (ex-Vostok-4) Dauriya (ex-Suzdal) Dikson (ex-Vagales)

Bldr: Zhdanov SY, Leningrad (In serv. 1963-66)

Donbass (ex-Kirishi) SEVAN (ex-Vyborgles) TAMAN' (ex-Vostok-3) YAMAL (ex-Svirles)



Yamal-with Hormone helicopter on deck



1979



Sevan

D: 9,650 tons (fl) S: 16 kts Dim: 121.9 × 16.7 × 7.3 A: None Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-B Range: 7,380/14.5 M: 1 Burmeister & Wain 950 VTBF 110 diesel; 1 prop; 5,200 hp Man: 90 tot.

Remarks: Originally built as merchant timber-carriers, then converted as space-event support ships by the addition of more communications facilities and a helicopter platform over the stern — consequently losing access to the after hold. They can carry one Hormone helicopter but have no hangar. Now used as fleet supply ships as well as in space-related activities. Donbass has a Big Net air-search radar. A deckhouse over hold number three forward of the superstructure in Dikson, Taman, Dauriya, and Baskunchak. Seven sisters were converted to serve the Academy of Sciences as satellite-tracking ships.

• 9 Keyla class

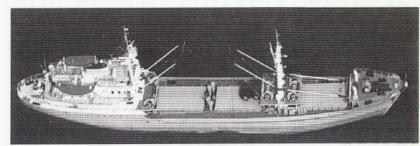
Bldr: Hungary (In serv. 1960-66)

MEZEN' ONEGA

Ponoy RITSA

TERIBERKA TULOMA

UNZHA USSURI YERUSLAN



Mezen'

U.S. Navy, 2-84

D: 2,000 tons (fl) S: 12 kts Dim: 78.5 × 10.5 × 4.6

A: None Electron Equipt: Radar: 1/Don-2 or Spin Trough M: 1 diesel; 1 prop; 1,000 hp Range: 4,200/10.7 Man: 26 tot.

Remarks: 1,296 grt/1,280 dwt. Carry 1,100 tons of cargo. Ritsa has a deckhouse over her after hatch and numerous communications antennas, and may collect intelligence.

• 3 MP-6-class former landing ships

Bldr: Hungary (In serv. 1959-60)

BIRA IRGIZ VOLOGDA

D: 2.100 tons (fl) S: 12 kts Dim: 75.0 × 11.3 × 4.4

M: 1 diesel; 1 prop; 1,000 hp

REMARKS: Unsuccessful as landing ships, bow doors welded closed. Sisters Bureya and Khoper serve as missile transports.



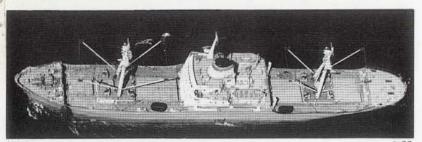
Bira

1975

CARGO SHIPS (continued)

♦ 2 Andizhan class 1959-60) Bldr: Neptunwerft, Rostock, East Germany (In serv.

ONDA POSET



Onda

5-83

D: 6,739 tons (fl) S: 13.5 kts Dim: 104.2 × 14.4 × 6.6 M: 1 diesel; 1,890 hp
 A: None Electron Equipt: Radar: 1/Don-2 Range: 6,000/13.5
 Man: 43 tot.

Remarks: 3,368 grt/4,324 dwt. Cargo: 3,954 tons. Sister Yemetsk stricken. Two naval sisters are now missile transports; other sisters are in the merchant service.

♦ 1 Chulym class Bldr: Szczecin SY, Poland (In serv. 1953-57)

Severodonetsk

D: 5,050 tons (fl) S: 12 kts Dim: 101.9 × 14.6 × 6.0

A: None Electron Equipt: Radar: 1/Don-2

M: Reciprocating steam with auxiliary GT; 1 prop; 1,650 hp

Boilers: 2, watertube Range: 5,000/11.5 Man: 41 tot.

Remarks: 2,135 grt/3,120 dwt. 2,240 tons of cargo. Sisters Insar, Kamchatka, and Leninsk-Kuznetskiy stricken.

♦ 1 Donbass class Bldr: Szczecin SY, Poland (In serv. 1955)

SVIR

D: 7,200 tons (fl) S: 12 kts Dim: 108.2 × 14.6 × 7.2

A: None Electron Equipt: Radar: 1/Neptune

M: Reciprocating steam; 1 prop; 2,300 hp Boilers: 2, watertube

Range: 9,800/12

Remarks: 3,561 grt/4,864 dwt. 3,570 tons of cargo. Originally a coal-burning collier.

◆ 1 Kolomna class Bldr: Neptunwerft, Rostock (In serv. 1952-54)

SVANETIVA



Svanetiya

1976

D: 6,700 tons (fl) S: 13 kts Dim: $102.3 \times 14.4 \times 6.6$ Electron Equipt: Radar: 1/Don-2, 1/Neptune

IFF: 1/High Pole-A

M: Reciprocating steam plus GT; 1 prop; 2,450 hp

Range: 6,890/13 Man: 44 tot.

REMARKS: 3,758 grt/4,355 dwt. Cargo: 3,634 tons. Coal-burner. Svanetiya supports research work. Six sisters serve as Atrek-class submarine tenders. Sisters Kuznetsk, Krasnoarmeysk, and Megra discarded.

◆ 3 Telnovsk class Bldr: Hungary (In serv. 1949-57)

BUREVESTNIK LAG MANOMETR

D: 1,700 tons (fl) **S:** 11 kts **Dim:** $70.0 \times 10.0 \times 4.2$

M: 1 diesel; 800 hp Range: 3,300/9.7 Man: 40 tot.

Remarks: 1,194 grt/1,133 dwt. Several others serve as survey ships. Being discarded.

• up to 5 Khabarovsk class

Bldr: U.S.S.R. (In serv. 1950s)



Khabarovsk class

5-80

D: 650 tons (fl) S: 10.4 kts Dim: 46.4 × 8.0 × 3.2

A: 2/14.5-mm mg (II × 1) Range: 1,600/8

Electron Equipt: Radar: 1 or 2/Spin Trough M: 1 diesel; 600 hp

REMARKS: 402 dwt. Used by the KGB Maritime Border Guard in the Far East. Being replaced by the Antonov class. Formerly bore numbers in the VTR- . . . series.

PROVISION SHIPS

♦ 8 Mayak class Bldr: Dnepr SY, Kiev (In serv. 1971-76)

BUZULUK LAMA NEMAN ULMA ISHIM MIUS RIONI VYTEGRA



Neman

1982

D: 1,050 tons (fl) S: 11 kts Dim: 54.3 × 9.3 × 3.6 A: None Electron Equipt: Radar: 1/Spin Trough M: 1 diesel; 800 hp Range: 9,400/11 Man: 29 tot.

Remarks: 690 grt. Former trawlers. Refrigerated fish holds are used to carry provisions. Lama has two lifeboats and lacks bulwarks around the stern. Other naval sisters operate as intelligence-collectors and ASW training ships.

AMMUNITION SHIPS

◆ 10 Muna class Bldr: Nakhodka SY (In serv. 1960s)

VTR-81 VTR-82 VTR-83 VTR-84 VTR-85 VTR-91 VTR-92 VTR-93 VTR-94 VTR-148

D: 680 tons (fl) S: 11 kts Dim: 51.0 × 8.5 × 2.7

Electron Equipt: Radar: 1-2/Spin Trough — IFF: 1/High Pole-A

M: 1 diesel; 600 hp Man: 40 tot.

Remarks: When deployed, carry VTR—Voyenyy Transport (Military Transport) numbers, but in home waters are listed as MBSS—Morskaya Barzha Samokhodnaya Sukhogruznaya (Seagoing Self-Propelled Dry-Cargo Lighter). Specialized transports for torpedoes, surface-to-air missiles, and other munitions; cargo hatch arrangements differ, depending on function.



Muna class VTR-91 — munitions transport version

AMMUNITION SHIPS (continued)



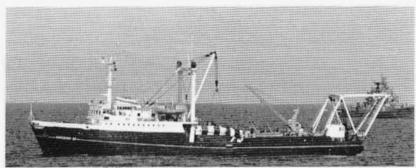
Muna class-torpedo transport version

1982

MOORING TENDERS

10 Sura class Bldr: Neptunwerft, Rostock, East Germany (In serv. 1965-72, 1976-78)

KIL-1 KIL-21 KIL-23 KIL-29 KIL-32 KIL-2 KIL-27 KIL-31 KIL-33



KIL-32 - with salvage submersible on deck amidships PH2 P. Soutar, U.S.N., 9-83



KIL-22 - note twin hatches amidships

U.S. Navy, 8-83

D: 2,370 tons (3,150 fl) S: 13 kts Dim: 87.0 (68.0 pp) × 14.8 × 5.0

A: None Electron Equipt: Radar: 2/Don-2

M: 4 diesels, electric drive; 2 props; 2,240 hp Range: 4,000/10

Remarks: KIL—Kilektor (Mooring Tender). 2,366 grt. 890 tons of cargo in hold amidships. Stern rig, which can lift 60 tons, is used for buoy-handling and salvage. Can also carry several hundred tons of cargo fuel. One has been used to transport two Gus-class amphibious air-cushion personnel landing craft. Mooring buoys are stowed amidships and moved aft for handling by the stern gallows rig via a chain-haul system. The diesel propulsion generator plant is forward.

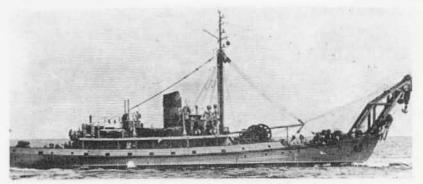
10 Neptun class Bldr: Neptunwerft, Rostock, East Germany (In serv. 1957-60)

KIL-3 KIL-6 KIL-12 KIL-15 KIL-17 KIL-5 KIL-9 KIL-14 KIL-16 KIL-18

D: 700 tons (1,240 fl) S: 12 kts Dim: 57.3 (46.5 pp) × 11.4 × 3.4 M: 2 triple-expansion; 1,000 hp Range: 1,000/11

Man: 41 tot.

Remarks: KIL—Kilektor (Mooring Tender). Most burn coal. 80-ton bow lift for buoyhandling and salvage. Four units deleted 1983; no recent sightings.



Neptun class

CABLE LAYERS

 ♦ 3 (+2) Emba class
 Bldr: Wārtsilā SY, Turku, Finland

 Emba (In serv. 5-80)
 Nepryadva (L: 24-4-81)
 Setun (L: 29-4-81)

 N . . . (In serv. . . .)
 N . . . (In serv. . . .)



Setun

Wärtsilä, 4-81

D: 2,050 tons (fl) S: 11 kts Dim: 75.90 (68.50 pp) × 12.60 × 3.10 Electron Equipt: Radar: 1/. . . nav.

M: 2 Wärtsilä Vasa 6R22 diesels; 1 prop; 1,360 hp

Man: 38 tot.

Remarks: 1,900 grt. Cargo: 300 tons cable. Intended for use in shallow coastal areas, rivers, and harbors. Intended to replace the discarded Kalar class. Have a bow-thruster. Two additional units were ordered from Wärtsilä's Helsinkryard in 1-85; they are to be 86.10-m overall but otherwise similar.

♦ 8 Klazma class Bldr: Wärtsilä SY, Turku, Finland (In serv. 1962-78)

In serv. In serv. In serv. In serv. 1977 YANA 1963 1963 Inguri 1978 TAVDA DONETS 1970 TSNA 1968 ZEYA 1962 KATUN 1974 INGUL



Ingul-early unit

VF-111, U.S Navy, 1985



Tavda-late unit

CABLE LAYERS (continued)

D: 6,920 tons (fl) S: 14 kts Dim: 130.4 (120.0 pp) × 16.0 × 5.75

Electron Equipt: Radar: 2/Don-2

M: 5 1,000-hp Wärtsilä 624TS diesels, electric drive; 2 props; 4,400 hp

Fuel: 250 tons Range: 12,000/14 Man: 110 tot.

Remarks: 5,760 grt/3,750 dwt. *Ingul* and *Yana*, the first built, have four 2,436-hp diesels, a longer forecastle, and are 5,645 grt/3,400 dwt (6,810 tons fl). All have ice-strengthened hulls. In the later units, the diesel engines drive five 680-kw generators, which provide power for propulsion and for all auxiliary functions. Soviet type designation: KS-*Kabel'noye Sudno* (Cable Ship). All cable machinery built by Submarine Cables, Ltd., Great Britain. *Katun'* carries 1,850 m³ of cable and displaces 7,885 tons (fl), drawing 5.76 m; she capsized while fitting out. The others have 3 cable tanks totaling 1,600 m³. *Ingul* refitted in Japan 1978, receiving new Dowty paired-wheel cable gear. All have a 500-hp active rudder and a bow-thruster.

♦ 1 Telnovsk class Bldr: Hungary (In serv. early 1950s)

KS-7



KS-7

D: 1,700 tons (fl) S: 11 kts Dim: 73.0 × 10.0 × 4.2 M: 1 diesel; 1 prop; 800 hp Range: 3,300/9.7

Remarks: Converted small cargo ship; cable sheaves project 3 m out past bow. In Pacific Fleet.

FLEET TUGS

♦ 2 Neftegaz-class oilfield tug/supply vessels Bldr: A. Warski SY, Szczecin, Poland

ALEKSEY KORTUNOV (10-83) ILGA (In serv. 4-11-83)



Neftegaz-27 — a civilian sister

1984

1981

D: 2,800 tons (fl) S: 15 kts Dim: 81.5 (71.5 pp) × 16.3 (15.0 wl) × 5.4 A: None Electron Equipt: 2/... nav. M: 2 Sulzer-Sgoda diesels; 2 CP props; 7,200 hp Range: ... Fuel: 533 tons Man: 25

Remarks: 2,372 grt/1,396 dwt. Two of a class of 33 oilfield supply tugs ordered in 1982, the third and fourth to be delivered. Cargo: up to 600 tons dry cargo on deck plus 1,000 m³ liquid cargo. Can act as a tug and has four firefighting water monitors. Has a bow-thruster. Broad, level fantail and round-down stern would permit the ship to be rapidly adapted for minelaying.

◆ 10 Goryn class Bldr: Rauma-Repola, Finland (In serv. 1977-78, 1982-83)

MB-105 (BAYKALSK) MB-18 (BEREZINSK) MB-119 (BILBINO) MB-30 MB-31 MB-32 MB-35 MB-36 MB-38 MB-61

D: 2,240 tons (2,600 ft) S: 13.5 kts Dim: 63.5 × 14.3 × 5.1 Electron Equipt: Radar: 2/Don-2

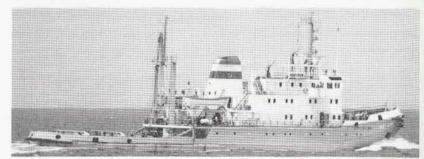
M: 1 Russkiy Type 67N diesel; 3,500 hp Range: . . . Man: 40 tot.

Remarks: Soviet type designation: MB—Morskoy Buksir (Seagoing Tug). 1,600 grt. 35-ton pull. For ocean towing, salvage, and fire-fighting. Sister Bolshevetsk lost 2-79 off Japan. Later units have a type 671 diesel and produce 43 tons bollard pull. Second series of nine began with MB-30, launched 15-12-81 and ended with MB-108, delivered 9-83. Three others have been redesignated as rescue tugs—SB—Spastel'noye Buksir: SB-365 (ex-MB-29), SB-523 (ex-MB-64), and SB-524 (ex-MB-108).



MB-36 - second series

French Navy, 1983



MB-105 — which initially bore the name Baykalsk

9-83

♦ 11 (+...) Sorum class Bidr: Yaroslavl SY, U.S.S.R. (In serv. 1974-...)

MB-6 MB-28 MB-115 MB-304 MB-25 MB-58 MB-119 MB-307 MB-26 MB-112 MB-148



MB-23 - a Soviet Navy Sorum

198

D: 1,210 tons (1,656 fl) S: 14 kts Dim: $58.3 \times 12.6 \times 4.6$ A: Named units only: 4/30-mm AA (II \times 2) Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-B M: 2 Type 5-2D42 diesels, electric drive; 1 prop; $1_{\xi}500$ hp Fuel: 322 tons Range: 6,720/13 Man: 35 tot.

Remarks: MB means Morskoy Buksir (Seagoing Tug). A modified version with larger superstructure and an A-frame kingpost aft is used by the Ministry of Fisheries as a rescue tug, prominently displaying Spastel' (Rescue) on the black hull sides; named the Almaz-class, it includes Almaz, Kapitan Beklemishev, and Ametist. Eleven armed versions of the design serve the KGB Maritime Border Guard as patrol ships; see under corvettes on an earlier page.

51 Okhtenskiy class Bldr: Petrozavod SY, Leningrad (In serv. 1958-early 1960s)



MB-175 - Okhtenskiy class

JMSDF, 1985

FLEET TUGS (continued)



SB-5 - a rescue tug Okhtenskiy

D: 700 tons (950 fl) S: 13.3 kts Dim: 47.3 × 10.3 × 5.5 Electron Equipt: Radar: 1-2/Don-2 or Spin Trough - IFF: 1/High Pole-A M: 2 diesels; 1 prop; 1,500 hp Range: 7,800/7 Man: 40 tot.

Remarks: Several have two 57-mm AA (II × 1) and are operated by the KGB Maritime Border Guard for use as patrol ships. Units with names are civilian; naval units have MB — Morskoy Buksir (Seagoing Tug) or SB — Spastel'noye Buksir (Rescue Tug) hull numbers; the latter carry an "unsinkable" lifeboat or divers' workboat to port and are submarine-associated. A total of 63 were built, Soviet name: Goliat class.

Bldr: Riga SY and Repair, and Vano Sturua SY (In serv. 9 Roslavl class 1950s)

MB-69 MB-94 MB-134 MB-145 MB-146 MB-147 3 others



MB-94 - Roslavl class

1975

D: 750 tons (fl) **S**: 11 kts **Dim**: $44.5 \times 9.5 \times 3.5$

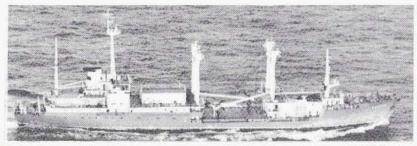
M: Diesel-electric; 2 props; 1,200 hp Range: 6,000/11 Man: 28 tot.

Remarks: All have MB pendants - Morskoy Buksir (Seagoing Tug). Distinguished from the Okhtenskiy class by a shorter forecastle, small pilothouse, and single pole mast. Beginning to be discarded.

SALVAGE AND RESCUE SHIPS

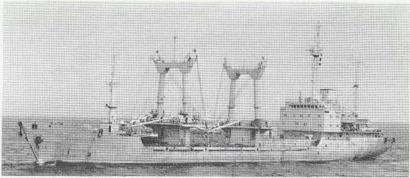
 4 Pionier Moskvyy-class salvage ships Bldr: Vyborg SY

Mikhail Rudnitskiy (In serv. 1979) GIORGIY KOZMIN' (In serv. 1980) Giorgiy Titoy (In serv. 1983) SAYANIY (In serv. 1984)



Sayaniy - with longer forecastle and poop, additional deckhouse

JMSDF, 8-84



Giorgiy Kozmin'

PH1 F. Barbante, U.S.N., 9-83

D: 10,000 tons (fl) S: 15.4 kts Dim: 130.3 (119.0 pp) × 17.3 × 6.93 A: None Electron Equipt: Radar: 2/Don-2 Man: 120 tot. M: 15DKRN 62/140-3 diesel; 1 prop; 6,100 hp Electric: 1,500 kw

Remarks: Modification of a standard merchant timber-carrier/container-ship design, retaining two holds. The after hold has two superstructure levels built over it, and the small hold forward has been plated over. Retains two 40-ton and two 20-ton booms and has had heavy-cable fairleads cut in the bulwarks fore and aft and a number of boat booms added to starboard. Titov has a larger superstructure built over number three hold than do the first two. Sayaniy, painted in white and gray, has had the forecastle and poop decks extended, the deckhouse amidships one deck higher, and a two-level deckhouse over the forward hold area: she appears intended for some research role. Equipped with bow- and stern-thrusters and can be attached to a fourpoint salvage moor. First three carry the ensign of the Naval Salvage and Rescue Service and are named for important developers of research/salvage submersibles. Operate one salvage submersible, stowed in hold number two.

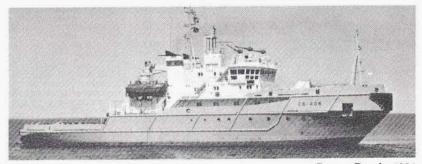
4 (+2) Sliva-class salvage tugs Bldr: Rauma-Repola Uusikaupunki SY, Finland

| | Laid down | L | In serv. |
|--------|-----------|----------|----------|
| SB-406 | | 6-7-83 | 20-2-84 |
| SB 408 | | 28-10-83 | 5-6-84 |
| SB-921 | 17-8-84 | 28-12-84 | 5-7-85 |
| SB-922 | 31-8-85 | 3-5-85 | |



SB-406 - exercising fire monitors

Rauma-Repola, 1984



SB-408

Rauma-Repola, 1984

D: Approx. 3,300 tons (fl) S: 16 kts Dim: 69.20 (60.10 pp) × 15.40 × 5.10 Electron Equipt: Radar: 2/. . . nav.

M: 2 SEMT-Pielstick/Russkiv Dizel 6PC 2.5 L400 (TS HN40/46) diesels; 2 CP props; 7,800 hp -- bow-thruster

Man: 43 crew + 10 salvage party

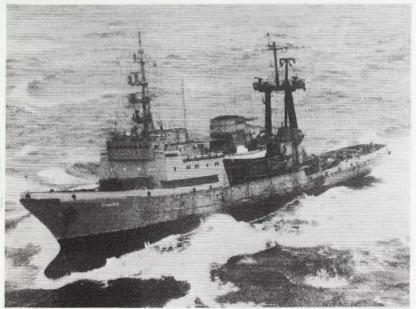
REMARKS: 2.050 grt/810 dwt. Ice-reinforced hull. Able to support divers to 60 m. Have four water monitors. One 60- and one 30-ton winch. Unique 350-m floating power cable to support vessels in distress. 5-ton electrohydraulic crane. Second pair ordered 4-84. Two more planned.

SALVAGE AND RESCUE SHIPS (continued)

♦ 3 Goryn-class rescue tugs Bldr: Rauma-Repola, Finland (In serv. 1982-83)
SB-236 (ex-MB-29) SB-523 (ex-MB-64) SB-524 (ex-MB-108)

Remarks: Data as for tug sisters on earlier page. SB—Spastel'noye Buksir (Rescue Tug). Change in designation appears to have been administrative only; no change to characteristics. Several Okhtenskiy class and at least one Roslavl class (SB-46) are also designated as rescue tugs.

♦ 3 Ingul-class salvage tugs Bldr: United Admiralty SY, Leningrad Pamir (In serv. 1975) Mashuk (In serv. 1972) Alatau (In serv. 1984)



Pamir - in heavy seas, showing bulbous bow

198

D: 3,200 tons (4,050 fl) S: 20 kts Dim: $92.8 \times 15.4 \times 5.8$ Electron Equipt: Radar: 2/Don-2

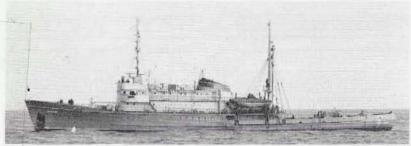
IFF: 1/High Pole-B, 1/Square Head

M: 2 type 58D-4R diesels; 2 props; 9,000 hp Range: 9,000/18.7 Man: 120 tot.

REMARKS: Two sisters, Yaguar and Bars, in the merchant marine, have 35-man crews, plus bunks for 50 rescued personnel. Very powerful tugs with constant-tension highline personnel rescue system, salvage pumps, fire-fighting equipment, and complete diving gear, capable of supporting divers to 60-m depths. Have a 94-ton bollard-pull. Large bulbous bow. Photo of Alatau in addenda.

• 2 Pamir class Bldr: Gävle, Sweden (In serv. 1958)

AGATAN ALDAN



French Navy, 1-83

D: 1,443 tons (2,240 fl) S: 17.5 kts Dim: 78.0 × 12.8 × 4.0 Electron Equipt: Radar: 2/Don-2

M: 2 M.A.N. G10V 40/60 diesels; 2 CP props; 4,200 hp

Range: 15,200/17.5; 21,800/12

Remarks: 1,443 grt. One 10-ton and two 1.5-ton booms. Carry fixed fire pumps with 2,600 tons/hour capacity and portable pumps with 1,650 tons/hour capacity. Can support divers to a depth of 90 m, and have decompression chambers and powerful air compressors. Two sisters, the *Gidrograf* and *Peleng*, are intelligence collectors. *Agatan* refitted 1981 in Sweden.

◆ 2 Orel class Bldr: Valmet SY, Turku, Finland

SB 38 SB 43

Aldan

D: 1,200 tons (1,760 ft) S: 15 kts Dim: 61.3 × 11.9 × 4.5 Electron Equipt: Radar: 1/Don or Don-2 Man: 37 tot. M: 1 M.A.N. G5Z52/70 diesel; 1,700 hp Range: 13,000/13.5



SB-43 - Orel class

JMSDF, 1985

Remarks: SB—Spastel'noye Buksir (Rescue Tug). Built in the late 1950s. Several civilian sisters, including the Stremitel'nyy and Strogyy, serve the fishing fleet.

SEAGOING FIRE BOATS

♦ 11 Katun class Bldr: U.S.S.R. (In serv. 1970- . . .)

PZHS-64 PZHS-96 PZHS-98 PZHS-123 PZHS-124 PZHS-209 PZHS-282 PZHS-... PZHS-... PZHS-...



Katun class

D: 1,016 tons (fl) S: 17 kts Dim: 62.6 × 10.2 × 3.6 Electron Equipt: Radar: 1/Don-2—IFF: 1/High Pole-B M: 2 40DM diesels; 2 props; 4,000 hp Range: 2,200/16 Man: 32 tot.

REMARKS: Originally PDS—Pozharno-Degazatsionnoye Sudno (Fire-Fighting and Decontamination Ship); this designation later revised to PZHS—Pozharnoye Sudno (Fire-Fighting Ship). Extensive fire-fighting gear, including extendable boom. Powerful pumps. There are several civilian sisters, including the General Gamidov. PZHS-64, completed 1981, is the first of a new type, approx. 3-m longer and having an extra level to the superstructure; designated "Katun II" by NATO.

Note: See also harbor fireboat entries on page 579.

HOSPITAL SHIPS

• 2 Ob' class Bldr: A. Warski SY, Szczecin, Poland

OB' (In serv. 1980) YENESEY (In serv. 1981)

D: 11,000 tons (fl) S: 20 kts Dim: 154.0 (142.0 pp) \times 20.5 \times 5.2 Electron Equipt: Radar: 3/Don-2 M: 2 diesels; 2 props; . . . hp Man: 80 crew + 200 medical personnel

Remarks: Have civilian crews but carry uniformed naval medical personnel. Have 100 beds, 7 operating rooms. The hangar aft can accommodate a Hormone-C utility



Ob'

HOSPITAL SHIPS (continued)



-with Hormone-C SAR helicopter on deck

U.S. Navy, 5-84

helicopter. Bow-thrusters fitted. Intended to "provide medical and recreational facilities." There are a physical therapy facility, 2 gymnasiums, 2 pools, a library, and a 100-seat auditorium.

 20 ambulance craft Bldr: Wisla SY, Poland (In serv. 1978-81)

D: 240 tons (fl) S: 11.5 kts Dim: 32.7 × 7.4 × 2.0 Electron Equipt: Radar: 1/Mius navigational M: 2 diesels; 2 props; 570 hp Man: 17 tot.

Remarks: Pendant numbers in the SK-600 (SK - Sanitarnyy Kater = Clinic Cutter) series. White-painted.

INTELLIGENCE COLLECTORS (AGI)

Note: Many of the Soviet ships of this type, often designated ELINT (electronic intelligence) or SIGINT (signal intelligence) collectors, look like trawlers; others, such as the Primorye and and the Bal'zam class are obviously configured for their roles. No pretense is made that the AGIs are anything but intelligence collectors, which detect and analyze radioelectric and electromagnetic signals. Some of them patrol offshore from the home ports of ballistic-missile submarines, others follow Western fleets.

♦ 4 Al'pinist class Bldr: Yaroslavl SY, U.S.S.R. (In serv. 1981-82)

GS-7 GS-8 GS-19 GS-39

D: 1,202 tons (fl) S: 13 kts Dim: 53.7 (46.2 pp) × 10.5 × 4.3

Electron Equipt: Radar: 1/Don-2

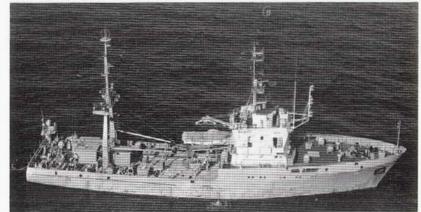
M: 1 Type 8NVD48-2U diesel; 1 CP prop; 1,320 hp Fuel: 162 tons Electric: 450 kw Range: 7,600/13 Man: Approx. 50 tot.

Remarks: Selected from a class of several hundred 322-dwt stern-haul trawlers, modified as intelligence collectors, although there are few identifiable intercept antennas. The 218-m³ former fish hold may provide electronics and/or additional accommodations spaces. Have a bow-thruster.



GS-39-Al'pinist class

French Navy, 3-81



GS-19 — with ELINT "huts" atop pilothouse and fore and aft of the after mast 7-84

♦ 3 Bal'zam class

SSV-80 (In serv. 1983)

Bldr: Kaliningrad SY, (In serv. 1980-. . .)

SSV-493 (In serv. 1982)

SSV-516 (In serv. 1980)



SSV-80

French Navy, 1985



SSV-493

D: 5,000 tons (fl) S: 22 kts Dim: 105.5 × 15.5 × 5.8

A: 1/30-mm gatling AA -2/SA-N-5 syst. (IV \times 2, 16 SA-7 Grail missiles) Electron Equipt: Radar: 2/Don-Kay

M: 2 diesels; 2 props; 9,000 hp Man: 200 tot.

INTELLIGENCE COLLECTORS (AGI) (continued)

Remarks: SSV—Sudno Svyazyy (Communications Vessel). Built-for-the-purpose intelligence-collection-and-processing ships, wholly military in concept. The two spherical radomes probably house satellite transmitting and receiving antennas. There are numerous intercept and direction-finding antenna arrays. Equipped to refuel under way and to transfer solid cargo and personnel via constant-tension rigs on either side of the after mast. There is only a remote "Kolonka" pedestal director for the gatling gun, no radar GFCS. SSV-516 operates in the Atlantic, the other two in the Pacific.

• 6 Primor'ye class

Bldr: . . . SY, U.S.S.R. (In serv. . . .)

SSV-591 KAVKAZ SSV-590 KRYM SSV-465 PRIMOR'YE SSV-464 ZABAYKAL'YE SSV-502 ZAKARPAT'YE SSV-501 ZAPOROZH'YE



Kavkaz (SSV-591) - without forward stump mast

U.S. Navy, 8-84



Zakarpat'ye (SSV-502)—with new "Christmas tree" intercept array mast amidships U.S. Navy, 1985

D: 2,600 tons (3,700 ft) S: 13 kts Dim: 84.7 × 14.0 × 5.5 Electron Equipt: Radar: 2/Don-Kay A: . . ./SA-N-7 Grail SAM M: 2 diesels; 1 prop; 2,000 hp Range: 12,000/13; 18,000/12 Man: 160 tot.

Remarks: Although these ships resemble small passenger liners, they are in fact modified versions of Mayakovskiy-class stern-haul factory trawlers. All given SSV—Sudno Svyazyy (Communications Vessel) pendants, and names obliterated, 1979-81. Carry hand-held Grail SAMs. SSV-465 has had the aft kingposts and booms removed; SSV-590, -591 have lost the forward stump masts.

• 9 Moma class

Bldr: Polnocny SY, Gdansk, Poland (In serv. 1968-74)

SSV-512 ARKHIPELAG SSV-. . . EKVATOR SSV-472 IL'MEN SSV-. . . KIL'DIN SSV-506 NAKHODKA SSV-509 PELORUS SSV-514 SELIGER SSV-501 VEGA SSV-...YUPITER

Nakhodka (SSV-506) - deckhouse atop bridge

U.S. Navy, 1983



Seliger (SSV-514) - modernized unit

U.S. Navy, 9-83



Ekvator-with 3 ELINT "huts" aft

U.S. Navy, 2-84

D: 1,260 tons (1,540 fl) S: 17 kts Dim: 73.3 × 10.8 × 3.8 Electron Equipt: Radar: 2/Don-2 Range: 8,000/11 Man: 80-120 tot. M: 2 Zgoda-Sulzer 6TD48 diesels; 2 CP props; 3,600 hp

Remarks: Ex-survey ships/buoy tenders. The Yupiter, Il'men, Pelorus, and Arkhipelag have new superstructures in the area forward of the bridge and new masts. Yupiter has similar, but less extensive, alterations. The others are much less modified, most having only a few canvas-covered antennas atop the bridge and "vans" for support equipment. Several carry 2/SA-N-5 systems (IV × 2, 16 SA-7 Grail missiles).

8 Mayak class

Bldr: . . . (In serv. 1967-70)

Aneroyd Girorulevoy (GS-536) KHERSONES KURS Kursograf Ladoga

GS-239 GS-242

Girorulevoy - circular radome atop bridge

U.S. Navy, 7-83



Ladoga — deckhouse added in waist, SA-7 positions fore and aft (Kurs similar) French Navy. 6-83

INTELLIGENCE COLLECTORS (AGI) (continued)



Khersones—short poop deck extension in waist, with SA-7 positions atop Skyfotos, 11-84



GS-242 - submarine Stop Light intercept array atop stack

French Navy, 4-83

D: 1,050 tons (fl) S: 11 kts Dim: 54.2 × 9.3 × 3.6 Electron Equipt: Radar: 1-2/Don-2 and/or Spin Trough M: 1 8NVD48 diesel; 800 hp Range: 9,400/11 Man: 60 tot.

Remarks: GS—Gidrograficheskoye Sudno (Hydrographic Survey Ship), an interesting euphemism. These ships vary greatly in appearance and equipment carried. Most carry hand-held SA-7 Grail missiles launched from two railed positions fitted either at the bow and stern or atop the deckhouse amidships. Ladoga carried 4/14.5-mm mg (II × 2) in 1980, since removed.

♦ 3 Nikolay Zubov class Bldr: A. Warski, SY, Szczecin, Poland (In serv. 1963-68)

SSV-503 Khariton Laptev SSV-468 Gavril Sarychev SSV-469 Semyen Chelyushkin

D: 2,200 tons (3,100 ft) S: 16.5 kts Dim: 90.0 × 13.0 × 4.7 Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-B M: 2 Zgoda 8TD48 diesels; 2 props; 4,800 hp Range: 11,000/14 Man: 100 tot.

Remarks: Ex-oceanographic ships. Similar to oceanographic sisters, but have a collection of antenna arrays. *Gavril Sarychev* has been extensively reconstructed: her forecastle has been extended to her stern, and an extra deck has been added to her superstructure. All have three launch positions for SA-7 Grail missiles. SSV-469 formerly carried a Strut Curve radar.



Semyen Chelyushkin (SSV-469)

French Navy, 9-83



Gavril Sarychev (SSV-468)

Ph1 F. Barbante, U.S.N., 9-83

◆ 2 Pamir class Bldr: Gävle, Sweden (In serv. 1958) SSV-480 GIDROGRAF SSV-477 PELENG (ex-Pamir)



Gidrograf (SSV-480)

French Navy, 10-82

D: 1,443 tons (2,300 fl) **S:** 17.5 kts **Dim:** 78.0 × 12.8 × 4.0

Electron Equipt: Radar: 2/Don-2

M: 2 M.A.N. G10V 40/60 diesels; 2 CP props; 4,200 hp

Range: 15,200/17.5; 21,000/12 Man: 120 tot.

Remarks: Ex-rescue tugs. Both heavily modified: extra deckhouse levels, extended forecastle, numerous collection antenna arrays, etc. Their extremely long endurance makes them invaluable in the Pacific and Indian oceans. Sisters Agatan and Aldan are salvage ships. Redesignated SSV—Sudno Svyazyy (Communications Vessel) in 1979-80. Have three launch positions for SA-7 Grail missiles.

♦ 4 Mirnyy class Bldr: 61 Kommuna SY, Nikolayev (In serv. circa 1962-64)

BAKAN LOTSMAN VAL VERTIKAL



Vertikal

French Navy, 9-82

INTELLIGENCE COLLECTORS (AGI) (continued)

D: 850 tons (1,300 fl) S: 17.5 kts Dim: 63.6 × 9.5 × 4.5

Electron Equipt: Radar: 2/Don-2 Man: 60 tot.

M: 4 6-cyl. diesels, electric drive; 1 prop; 4,000 hp Range: 18,700/11

REMARKS: Ex-whalers. Differ in detail. Very low freeboard amidships. Have two SA-7 Grail hand-launch positions. All received new deckhouse forward during 1970s.

♦ 15 Okean trawler class

Bldr: East Germany (In serv. 1962-67)

TEODOLIT

TRAVERS

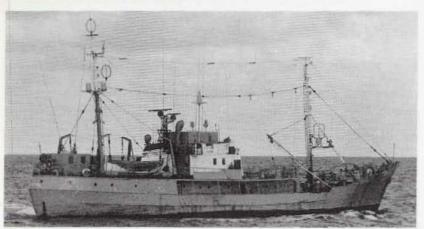
ZOND

ALIDADA AMPERMETR BAROGRAF BAROMETR

DEFLEKTOR Екногот GIDROFON KRENOMETR

LINZA LOTLIN' (GS-319) REDUKTOR

REPITER



Lotlin' - poop deck extended

French Navy, 10-82



Teodolit - original, short-poop configuration

French Navy, 9-83

D: 700 tons (fl) S: 11 kts Dim: 50.8 × 8.9 × 3.7 Electron Equipt: Radar: 1-2/Don-2 M: 1 diesel; 540 hp Range: 7,900/11 Man: 60 tot.

Remarks: Ex-trawlers. Appearances vary greatly, many having had their poop deck extended well forward of the bridge superstructure and their port sides plated in. Barograf has 4/14.5-mm mg (II × 2), and most have two hand-launch positions for

Note: Dnepr-class intelligence collectors Izermetel' and Protraktor, not sighted since 1980, are believed to have been stricken.

OCEANOGRAPHIC-RESEARCH SHIPS

Note: The only units included here are those known to be subordinate to the Soviet Navy. There are in addition nearly 300 research ships under the control of civilian agencies, primarily the Ministry of Science and the Ministry of Fisheries. Some of the civilian ships may from time to time perform research in support of military aims, but their purpose is primarily peaceful. All naval units are painted white.

* 18 Yug class

Bldr: Polnocny SY, Gdansk, Poland (In serv. 5-78 to 6-9-83)

BRIZ MARSHAL GELOVANI STRELETS DONUZLAY NIKOLAY MATUSEVICH STYOR GALS PEGAS TAYGA GIDROLOG PERSEY VIZIR GORIZONT PLUTON Yug MANGYSHLAK SENEZH ZODIAK

D: 2,500 tons (fl) S: 15.6 kts Dim: 82.50 (75.80 pp) × 13.50 × 3.97 Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-B

M: 2 Zgoda-Sulzer 8TD48 diesels; 2 CP props; 4,400 hp (3,600 sust.)

Electric: 1,920 kVA Fuel: 343 tons Endurance: 40 days Range: 9,000/12

Man: 8 officers, 38 men, 20 scientists



Tayga

U.S. Navy, 12-84



Marshal Gelovani

Skyfotos, 5-84

Remarks: Deck reinforcements for six 25-mm AA (II × 3). Two 100-kw electric motors for slow-speed operations; 300-hp bow-thruster. Quadrantial davit over stern ramp, with 4-ton lift. Two 5-ton booms and several oceanographic davits. Two Type 727 fiberglass-hulled survey launches. Have 3 echo-sounders, 6 laboratories. Intended to perform all forms of oceanographic research and hydrographic survey duties.

 6 Akademik Krylov class 1974-79)

Bldr: A. Warski SY, Szczecin, Poland (In serv.

ADMIRAL VLADIMIRSKY AKADEMIK KRYLOV

IVAN KRUZHENSTERN LEONID DEMIN

LEONID SOBELYEV MIKHAIL KRUPSKIY



Leonid Sobelyev - pointed stern

L. & L. Van Ginderen, 1985



Admiral Vladimirskiy — blunt stern, Post Lamp radars

L. & L. Van Ginderen, 2-83



Mikhail Krupskiy - cropped stern, large radome amidships French Navy, 1-83

OCEANOGRAPHIC-RESEARCH SHIPS (continued)

D: 6,600 tons (9,100 fl) S: 20.4 kts Dim: 147.0 × 18.6 × 6.3 Electron Equipt: Radar: 3/Don-2-IFF: 1/High Pole-B M: 4 diesels; 2 props; 16,000 hp Endurance: 90 days Range: 23,000/15.4 Man: 90 tot.

REMARKS: The largest ships of their type in any navy. Equipped with helicopter hangar and flight deck, two survey launches, and twenty-six laboratories totalling 900 m2. The Leonid Demin and Mikhail Krupskiy were delivered in 1978 and 1979, respectively, and because they have pointed sterns, are about 2.5 m longer, as is Leonid Sobelyev. Admiral Vladimirskiy carries 2 Post Lamp gun/torpedo fire-control radars, one atop the forward superstructure and one on the foremast-both offset to star-

 1 Vladimir Kavrayskiy class Bldr: Admiralty SY, Leningrad (In serv. 1973)

VLADIMIR KAVRAYSKIY



Vladimir Kavrayskiy

1974

D: 3,900 tons (fl) S: 15.4 kts Dim: 70.0 × 18.0 × 6.4 M: 3 Type 13D100 diesels, electric drive; 2 props; 4,800 hp Endurance: 60 days Range: 13,900/9.4

Remarks: Greatly modified version of the Dobrynya Nikitich icebreaker class for arctic research. Has helicopter deck but no hangar, a survey launch, nine laboratories, totaling 180 m², one 8-ton crane, two 3-ton booms, and a hold capacity of 200 m³. The Otto Schmidt, completed in 1979 and subordinate to the Academy of Sciences, differs in appearance but is of similar design. The civilian research icebreakers Georgiy Sedov and Petr Pakhtusov, also subordinated to the Academy of Science, are units of the Dobrynya Nikitich class with very few external alterations.

4 Abkhaziya class

Bldr: Mathias Thiesen Werft, Wismar, East Germany (In

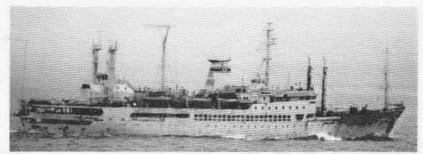
serv. 1971-73)

ABKHAZIYA

ADZHARIYA

BASHKIRIVA

MOLDAVIYA



Abkhaziya, home-ported at Vladivostok

U.S. Navy, 7-84

D: 5,460 tons (7,500 fl) S: 21 kts Dim: 124.7 × 17.0 × 6.4 Electron Equipt: Radar: 3/Don-2 M: 2 M.A.N. K6Z 57/80 diesels; 2 props; 8,000 hp Endurance: 60 days Range: 20,000/16 Man: 85 tot.

Remarks: Military version of the Academy of Science's Akademik Kurchatov class, with helicopter deck, telescoping hangar, Vee Cone communications antenna, sternmounted A-frame lift gear, two survey launches, and twenty-seven laboratories totaling 460 m2.

• 8 Nikolay Zubov class 1963-68)

Bldr: A. Warski SY, Szczecin, Poland (In serv.

ALEKSEY CHIRIKOV ANDREY VIL'KITSKIY

Boris Davydov FADDEY BELLINGSGAUZEN FYODOR LITKE NIKOLAY ZUBOV SEMEN DEZHNEV VASILIY GOLOVNIN



Semen Dezhnev - survey launches deleted

U.S. Navy, 7-83



Faddey Bellingsgauzen - late unit with large platform aft

J. Jedrlinic, 2-83

D: 2,200 tons (3,020 fl) S: 16.5 kts Pim: 90.0 × 13.0 × 4.7 Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole M: 2 Zgoda-Sulzer 8TD48 diesels 2 props; 4,800 hp Endurance: 60 days Range: 11,000/14 Man: 50 tot.

REMARKS: Considerable variation from ship to ship. Can carry four survey launches, but usually have only two. Nine laboratories, totalling 120 m². Two 7-ton and two 5-ton booms, nine .5-1.2-ton oceanographic-equipment davits, 600 m^3 capacity total in two holds. The after platform, not for helicopters, is larger in the later ships. Three others serve as intelligence collectors.

1 Nevel'skoy class

Bldr: . . . SY, Nikolayev (In serv. 1962)

NEVEL'SKOY



Nevel'skoy

1983

D: 2,350 tons (fl) S: 17 kts Dim: 83.8 × 15.2 × 3.8 Man: 45 tot. Electron Equipt: Radar: 2/Don-2 M: 2 diesels; 2 props; 4,000 hp Range: 10,000/11

Remarks: The only naval oceanographic research ship, other than the Vladimir Kavrayskiy, built in the Soviet Union; apparently the prototype for the Nikolay Zubov design. In the Pacific Fleet.

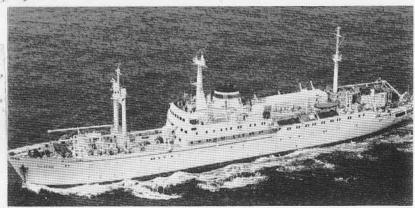
 3 Polyus class Bldr: Neptunwerft, Rostock, East Germany (In serv. 1962-64)

BALKHASH BAYKAL Polyus

D: 4,560 tons (6,900 fl) S: 14.2 kts Dim: 111.6 × 14.4 × 6.3 Electron Equipt: Radar: 2/Don-2 (Balkhash: 2/Palm Frond)

M: 4 diesels, electric drive; 2 props; 4,000 hp Endurance: 75 days Range: 25,000/12.3

OCEANOGRAPHIC-RESEARCH SHIPS (continued)



Balkhash

1983



Polyus

French Navy, 2-83

Remarks: Seventeen laboratories, totaling 290 m². Polyus has less-extensive superstructure, different mast arrangement.

HYDROGRAPHIC-SURVEY SHIPS

Note: Ships of the Finik, Moma, Biya, Kamenka, and Samara classes are used as hydrographic-survey ships and as navigation tenders, handling buoys, marking channels, etc. They set and retrieve the 2,000 buoys and 4,000 spar buoys that are taken up for the winter months. Most can carry from two to six navigation buoys. In addition, they are equipped to take basic oceanographic and meteorological samplings. The Soviet Navy's Hydrographic Service has the task not only of surveying Soviet and overseas waters, but of maintaining no less than 600 lighthouses, 150 noise beacons, and 8,000 navigation buoys.

| ♦ 22 F | enik class | Bldr: I | Polnocny SY | , Gdansk, P | oland (In serv. 1979-81) |
|--------|------------|---------|-------------|-------------|--------------------------|
| GS-44 | GS-260 | GS-280 | GS-392 | GS-400 | GS-404 |
| GS-47 | GS-270 | GS-297 | GS-397 | GS-401 | GS-405 |
| GS-86 | GS-272 | GS-301 | GS-398 | GS-402 | |
| GS-87 | GS-278 | GS-388 | GS-399 | GS-403 | |



GS-401

25 Flot., French Navy, 1984

D: 1,200 tons (fl) **S:** 13 kts **Dim:** 61.30×11.80 (10.80 wl) \times 3.27 **Electron Equipt:** Radar: 2/Don-2—IFF: 1/High Pole-B

M: 2 Cegielski-Sulzer diesels; 2 CP props; 1,920 hp (plus two 75-kw electric motors for quiet, 6-kt operations)

Electric: 675 kVA Endurance: 15 days Range: 3,000/13

Man: 5 officers, 23 men

Remarks: GS—Gidrograficheskoye Sudno (Hydrographic Vessel). Intended for navigational buoy-tending and survey, for which 4 echo-sounders are fitted. Up to 3 fiberglass 3-dwt utility landing craft can be stowed on the buoy working deck, beneath the 7-ton crane. Bow-thruster of 130 kw fitted. Have hydrological, hydrographic, and cartographic facilities. Also, one built for East Germany and four for Poland (two civilian).

♦ 19 Moma class

Bldr: Polnocny SY, Gdansk, Poland (In serv. 1967-74)

AL'TAYR ARTIKA
ANADYR' ASKOL'D
ANDROMEDA CHELEKEN
ANTARES EL'TON
ANTARTIKA KOLGUEV

Kril'on Liman Mars Morzhovets Okean Rybachiy (ex-Odograf) Sever Taymyr Zapolar'ye



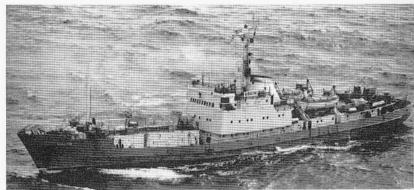
Taymyr

PH2 P. Soutar, U.S.N., 9-83



Kolguev — with boats disembarked; note auxiliary stack between davits

U.S. Navy, 8-83



Rybachiy - armed unit with deckhouse filling well deck

U.S. Navy, 9-83

D: 1,260 tons (1,540 ft) S: 17 kts Dim: 73.3 × 10.8 × 3.8 Electron Equipt: Radar: 2/Don-2—IFF: 1/High Pole-A M: 2 Zgoda-Sulzer 6TD48 diesels; 2 CP props; 3,600 hp Endurance: 35 days Range: 8,700/11 Man: 56 tot.

Remarks: Carry one survey launch and a 7-ton crane, and have four laboratories, totaling 35 m². The *Rybachiy* (ex-*Odograf*) has a deckhouse in place of the crane and may be involved in oceanographic research; the ship is armed with 4/12.7-mm mg (II × 2) forward and 2/SA-N-5 systems (IV × 2; 32 SA-5 Grail missiles) aft. Sisters in Polish, Bulgarian, and Yugoslav navies. Nine more serve as intelligence collectors.

14 Biya class
 Bldr: Polnocny SY, Gdansk, Poland (In serv. 1972-76)

GS-182 GS-194 GS-202 GS-206 GS-210 GS-269 GS-273 GS-193 GS-198 GS-204 GS-208 GS-214 GS-271 GS-275

D: 750 tons (fl) S: 13 kts Dim: 55.0 × 9.2 × 2.6

Electron Equipt: Radar: 1/Don-2

M: 2 diesels; 2 CP props; 1,200 hp Endurance: 15 days

Range: 4,700/11 Man: 25 tot.

Remarks: GS—Gidrograficheskoye Sudno (Hydrographic Survey Ship). Similar to Kamenka class, but have longer superstructure and less buoy-handling space; one survey launch; one 5-ton crane. Laboratory space: 15 m². One unit transferred to Guinea-Bissau, another (GS-186) to Cuba in 1980.

HYDROGRAPHIC-SURVEY SHIPS (continued)



GS-186—under tow to Cuba; note crane at forecastle break

1980

♦ 10 Kamenka class Bldr: Polnocny SY, Gdansk, Poland (In serv. 1968-72)

GS-66 GS-107 GS-207 GS-74 GS-108 (ex-Vernier) GS-211 GS-82 GS-114 (ex-Bel'bek)

GS-103 GS-203



GS-107—note crane in center of working deck

1980

D: 703 tons (fl) S: 13.7 kts Dim: 53.5 × 9.1 × 2.6 Electron Equipt: Radar: 1/Don-2 M: 2 diesels; 2 CP props; 1,765 hp Range: 4,000/10 Man: 40 tot.

Remarks: GS—Gidrograficheskoye Sudno (Hydrographic Survey Ship). Similar to Biya class, but have more facilities for stowing and handling buoys. No survey launch. One 5-ton crane. One sister in the East German Navy. One transferred to Cape Verde in 1980.

◆ 15 Samara class Bldr: Polnocny SY, Gdansk, Poland (In serv. 1962-64)

AZIMUT GORIZONT RUMB (GS-118) VOSTOK
DEVIATOR GRADUS TROPIK GS-275 (ex-Yug)
GIGROMETR KOMPAS TURA (ex-Globus) ZENIT

GLUBOMETR PAMYAT' MERKURIYA VAYGACH

D: 1,050 tons (1,276 fl) S: 15.5 kts Dim: 59.0 × 10.4 × 3.8 Electron Equipt: Radar: 2/Don-2

Remarks: Have one survey launch and $15~\mathrm{m}^2$ of laboratory space. The Tura (ex-Globus) had her forecastle extended to her superstructure in 1978 and her 7-ton crane removed; able to accommodate 120 personnel, she is used for training. Deviator served briefly as an intelligence collector. Vaygach has a large deckhouse surrounding the base of the buoy crane.



Pamyat Merkuriya

10-83



Tura — buoy-handling crane removed, forecastle extended

978

◆ 4 Telnovsk class Bldr: Hungary (In serv. 1949-57)

AYTODOR SIRENA SVIYAGA ULYANA GROMOVA

D: 1,300 tons (1,700 fl) S: 11 kts Dim: 70.0 × 10.0 × 4.2 Electron Equipt: Radar: 1/Neptune, Don, or Don-2 M: 1 Ganz diesel; 800 hp Range: 3,300/9.7 Man: 50 tot.

Remarks: Similar in most respects to cargo-ship version. All carry one launch; 15 m^2 of laboratory space. Ulyana Gromova has a lengthened poop deck; the similar Stvor has been stricken.

♦ 3 Melitopol class Bldr: U.S.S.R. (In serv. 1952-55)

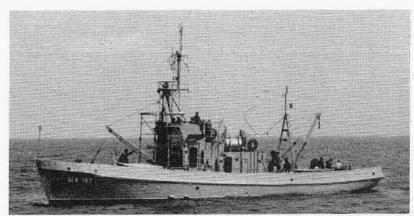
Mayak Niviler Prizma

D: 1,200 tons (fl) S: 11.3 kts Dim: $57.6 \times 9.0 \times 4.3$ Range: 2,500/10.5 Electron Equipt: Radar: 1/Don M: 1 Type 6DR30/40 diesel; 600 hp

Remarks: Converted small, two-hatch cargo ships with few modifications; 673 grt/776 dwt. Carry one survey launch on deck.

several GPB-480-class inshore-survey craft Bldr: U.S.S.R. (In serv. 1960s)

GPB-480, GPB-767, etc.



GPB-767 - GPB-480 class

French Navy, 8-79

D: 120 tons (fl) S: 12 kts Dim: 29.0 × 5.0 × 1.7 Electron Equipt: Radar: 1/Spin Trough M: 1 diesel; 450 hp Endurance: 10 days Range: 1,600/10 Man: 15 tot.

Remarks: GPB—Gidrograficheskoye Pribezhnyy Bot (Coastal Hydrographic Survey Boat). VM on the diving-tender version stands for Vodolaznyy Morskoy (Seagoing Diving Tender). Same hull and propulsion as the Nyryat-I-class diving tenders. The charthouse/laboratory is 6 m², and there are two 1.5-ton derricks. The smaller GPB-710 class is carried aboard the larger survey and oceanographic ships listed above:

D: 7 tons (fl) **S:** 10 kts for 150 nautical miles **Dim:** $11.0 \times 3.0 \times 0.7$.

MISSILE-RANGE INSTRUMENTATION SHIPS

Note: A very large, 260-m missile-range support or space event support ship was reported fitting out at Baltic SY, Leningrad, during 1985; perhaps nearly twice the size of *Marshal Nedelin*, it may be nuclear-powered.

♦ 1 new construction Bldr: Admiralty SY, Leningrad

Marshal Nedelin (In serv. 1984)

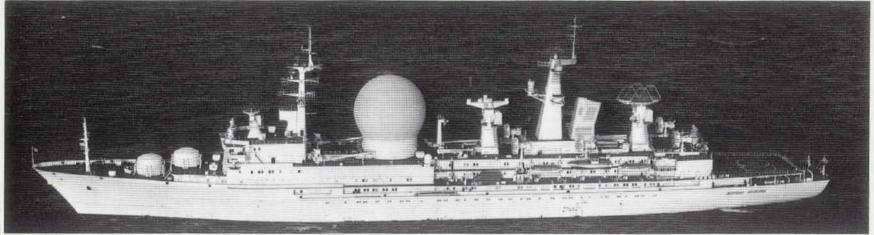
D: 24,000 tons (fl) S: 20 kts Dim: 213.0 × 27.7 × 7.7

Electron Equipt: Radar: 3/Palm Frond, 1/Strut Pair, 1/Fly Screen (helo control), 1/End Tray (balloon tracking)

control), 1/End Tray (balloon tracking) IFF: 2/Salt Pot, 1/High Pole transponders TACAN: 2/Round House

M: 2 gas turbines; 2 props; 54,000 hp Range: . . . Man: 200 tot.

MISSILE-RANGE INSTRUMENTATION SHIPS (continued)



Marshal Nedelin

French Navy, 10-84



Marshal Nedelin — note 2 covered theodolite tracking camera positions forward R. Neth. Navy, 10-84



Marshal Nedelin

U.S. Navy, 11-84

Remarks: Possibly intended to begin replacement of the aged Desna- and Sibir'-class range tracking ships, but equipped also to serve in a space tracking and communications role. Tracking antennas include 1/Quad Leaf, 3/Quad Wedge, 4/Quad . . . , and 6 telemetry reception arrays. A large Ship Globe radome conceals a satellite communications antenna. Twin hangars accommodate 2 Ka-27/32 Helix utility helicopters. Hull has a bulbous bow form. Foundations for 6/30-mm gatling AA and 3/Bass Tilt radar directors are present. Has a swimming pool just abaft the stack. Operates in the Pacific Fleet.

◆ 2 Desna class Bldr: Warnow Werft, Warnemünde (In serv. 1963)

Chazhma (ex-Dangera) Chumikan (ex-Dolgeschtchel'ye)

D: 14,065 tons (fl) S: 15 kts Dim: 139.9 × 18.0 × 7.9

Electron Equipt: Radar: 2/Don-2, 1/Head Net-B, 1/Ship Globe (tracking)

EW: 2/Watch Dog

M: 1 M.A.N. diesel; 5,400 hp Range: 9,000/13

REMARKS: Heavily modified cargo ships. Tracking radar in large dome atop the bridge, with three tracking directors mounted forward. Hormone helicopter with hangar aft. Vee Cone communications antennas atop the stack. Based in the Pacific. Only ships with Head Net-B radar (both reflectors in the same plane).



Chumikan

1981

♦ 4 Sibir' class Bldr; A. Warski SY, Szczecin, Poland (In serv. 1958)

Chukotka Sakhalin Sib

SIBIR' SPASSK (ex-Suchan)



Chukotka - note different superstructures, Big Net radar

1981



Spassk - modified with flush deck, Head Net-C

1981

D: 7,800 tons (fl) S: 12 kts Dim: 108.2 × 14.6 × 7.2 Electron Equipt: Radar: 2/Don-2, 1/Head Net-C or Big Net, several tracking sets M: Triple-expansion; 1 props; 2,300 hp Range: 11,800/12

Remarks: Converted (circa 1960) Donbass-class cargo ships. Carry Big Net or Head Net-C radar for tracking, and two or three tracking directors forward. Originally, only Chukotka was flush-decked; the others had a well deck forward. Now all are flush-decked. All carry one Hormone-C helicopter, but have no hangar. All are in the Pacific Fleet.

NOISE-MEASUREMENT SHIPS

♦ 5 or more Onega class Bldr: . . . (In serv. 1973- . . .)

GKS-52 GKS-83 GKS-224 GKS-286 SFP-95



GKS-52

D: 1,925 tons (fl) S: 20 kts Dim: 81.0 × 11.0 × 4.2 Electron Equipt: Radar: 1/Don-2 M: 1 gas turbine; 1 prop; 15,000 hp Man: 45 tot.

Remarks: GKS—Gidroakusticheskoye Kontrol'noye Sudno (Hydroacoustic Monitoring Ship) and indicates that these ships are successors to the T-43-class noise-monitoring ships. Helicopter deck aft, long forecastle, two pylon masts, and a low stack. SFP—Sudno Fizicheskiy Poley (Physical Fields Measuring Vessel)—on SFP-95 indicates different mission and sensors.

♦ 17 Modified T-43 class Bldr: Various (In serv. mid-1950s)

GKS-11 GKS-14 GKS-17 **GKS-20** GKS-23 **GKS-42** GKS-12 GKS-15 GKS-18 GKS-21 GKS-24 GKS-45 **GKS-19** GKS-22 **GKS-13 GKS-16** GKS-26



GKS-15

D: 500 tons (570 fl) S: 14 kts Dim: 58.0 × 8.6 × 2.3 Electron Equipt: Radar: 1/Neptune or Spin Trough IFF: 1/High Pole

M: 2 Type 9D diesels; 2 props; 2,200 hp Man: 77 tot.

Remarks: GKS = Gidroakusticheskoye Kontrol'noye Sudno (Hydroacoustic Monitoring Ship) and indicates that these ships measure the radiated noise of other ships, including submarines, by laying hydrophone arrays via the numerous small davits they carry aft. One 37-mm AA gun can be installed on the forecastle. At least two (GKS-25, -46) have been stricken.

DEGAUSSING/DEPERMING SHIPS

♦ 1 (+ . . .) Bereza class Bldr: . . . SY, Poland (In serv. 1985- . . .) SR-28

D: 2,700 tons (f) S: 15 kts Dim: 84.00 (75.80 pp) \times 13.50 \times 4.0 Electron Equipt: Radar: 1/Kivach — IFF: 1/High Pole-B M: 2 Zgoda-Sulzer 8TD48 diesels; 2 CP props; 4,400 hp (3,600 sust.) Electric: . . . Range: . . . Man: 70 tot.

Remarks: SR = Sudno Razmagnichivanya (Deperming Vessel). Design appears to be based on that of the Yug-class oceanographic ship, with the forecastle raised one deck higher. A large crane is fitted aft to handle deperming cables.

♦ 9 (+ . . .) Pelym class Bldr: . . . (In serv. 1971- . . .)

SR-191 SR-409 7 others

D: 1,300 tons (fl) S: 16 kts Dim: $65.5 \times 11.6 \times 3.4$ Electron Equipt: Radar: 1/Don-2 M: 2 diesels; 2 props; . . . hp Range: 4,500/12 Man: 70 tot.

Remarks: Numbers in the SR—Sudno Razmagnichivanya (Deperming Vessel) series. Apparently intended to replace the aged Sekstan and Korall classes. One transferred to Cuba. Late units have a tripod mast aft to support radio antenna wires; early ships had an aerial spreader on the stack.



SR-191 9-83



SR-191 9-83

♦ 1 or more Khabarov class Bldr: U.S.S.R. (In serv. 1950s)

D: 650 tons (fl) **S:** 10.4 kts **Dim:** 46.4 × 8.0 × 3.3 **M:** 1 diesel; 1 prop; 600 hp **Range:** 1,600/8

Remarks: Version of the steel-hulled coastal cargo ship design, with large deckhouse over forward hold area.

up to 20 Sekstan class
 Bldr: Finland (In serv. 1949-55)

D: 400 tons (fl) S: 11 kts Dim: 41.0 × 9.3 × 4.2 M: 1 diesel; 1 prop; 400 hp Range: 1,200/10.5 Man: 24 tot.

Remarks: Wooden-hulled; built as war reparations. Same hull also used for coastal survey ship and cargo ship versions, now discarded.

ICEBREAKERS

Note: The Soviet Union has far and away the largest and most powerful icebreaker fleet in the world. Its civilian component includes the atomic-powered Arktika class, the most powerful of all. The two types, patrol and support, that the navy operates are both based on the same civilian design and are among the very few conventionally driven icebreakers in Soviet service to be designed and built in the U.S.S.R. All other Soviet icebreakers now in service were built in Finland.

◆ 2 Ivan Susanin-class support icebreakers Bldr: Admiralty SY, Leningrad

IVAN SUSANIN (In serv. 1974) RUSLAN (In serv. 1981)



Ivan Susanin

1983

D: 3,400 tons (fl) S: 14.5 kts Dim: 70.0 (62.0 pp) × 18.3 × 6.5 Electron Equipt: Radar: 2/Don-Kay—IFF: 1/High Pole-B M: 3 Type 13D100 diesels, electric drive; 2 props; 5,400 hp Electric: 1,000 kw Fuel: 550 tons Range: 5,500/12.5; 13,000/9.4 Man: 140 tot.

ICEBREAKERS (continued)

Remarks: Based on the Dobrynya Nikitich and Vladimir Kavrayskiy designs. Sisters Aysberg, Dunay, Imeni XXV Sezda K.P.S.S., Imeni XXVI Sezda K.P.S.S. are armed and are operated by the KGB Maritime Border Guard as PSKR-Pogranichnyy Storozhevoy Korabl' (Border Patrol Ship). Helicopter deck aft, but no hangar. Both had their guns, Owl Screech and Strut Curve radars removed, were repainted black and white, and are operated as naval icebreakers.

♦ 7 Dobrynya Nikitich-class support icebreakers

Bldr: Admiralty SY, Leningrad (In serv. 1959-74)

BURAN Dobrynya Nikitich

IL'YA MUROMETS PERESVET

PURGA SADKO

VYUGA



Dobrynya Nikitich

D: 2,940 tons (fl) **S**: 14.5 kts **Dim**: $67.7 \times 18.3 \times 6.1$ Electron Equipt: Radar: 1-2/Don-2-IFF: 1/High Pole M: 3 13D100 diesels, electric drive; 3 props (1 fwd); 5,400 hp Range: 5,500/12; 13,000/9.4 Man: 100 tot.

Remarks: More than twenty of this class were built, the remainder being civilian. Peresvet, Purga, Sadko, and Vyuga were armed with 2/57-mm AA (II×1) and 2/25-mm AA (II × 1), now removed. Resemble the Ivan Susanin class, but have much less superstructure and an open fantail rigged for ocean towing. Later units do not have a bow propeller but have the same horsepower.

TRAINING SHIPS

♦ 3 Smol'ny class

Bldr: A. Warski SY, Szczecin, Poland (In serv. 1976-78)

KHASAN PEREKOP SMOL'NY



Khasan

Skyfotos, 6-82



Smol'ny

J.-C. Bellonne, 1979

D: 8,500 tons (fl) S: 20 kts Dim: 138.0 × 18.0 × 6.2

A: 4/76.2-mm DP (II × 2) -4/30-mm AA (II × 2) - RBU-2500 ASW RL $(XII \times 2)$

Electron Equipt: Radar: 4/Don-2, 1/Head Net-C, 1/Owl Screech, 1/Drum Tilt

Sonar: 1/M/F, hull-mounted EW: 2/Watch Dog — IFF: 1/High Pole-B

M: 4 diesels; 2 props; 16,000 hp

Range: 12,000/15 Man: 210 crew + 270 cadets

Remarks: Built to relieve the Sverdlov-class cruisers that were formerly used for cadet training. Can carry more than 270 cadets. The Perekop substitutes one Don-Kay radar for one of the four Don-2s. Carry six rowboats aft for exercising the cadets.

 2 Ugra class Bldr: Nikolayev (In serv. 1970-71)

BORODINO GANGUT



Gangut

French Navy, 1982

D: 6,900 tons (9,650 fl) S: 17 kts Dim: 145.0 × 17.7 × 6.4

A: 8/57-mm AA (II × 4)

Electron Equipt: Radar: 4/Don-2, 1/Strut Curve, 2/Muff Cob EW: 4/Watch Dog — IFF: 1/High Pole-B

M: 4 diesels; 2 props; 8,000 hp

Range: 21,000/10 Man: 300 crew + 400 cadets

Remarks: Soviet type designation: Uchebnoye Sudno (Training Ship). Similar to the submarine-tender version, but have accommodations and training facilities in place of workshops, magazines, storerooms, etc. Enlarged after deckhouse incorporates navigation-training space, including numerous duplicate navigator's positions. No helicopter facilities.

• 2 Modified Wodnik class

Bldr: Poland (In serv. 1977)

OKA LUGA



Oka

1977

D: 1,500 tons (1,800 fl) S: 15 kts Dim: 72.0 × 12.0 × 4.0

Electron Equipt: Radar: 3/Don-2

M: 2 Zgoda-Sulzer 6TD48 diesels; 2 CP props; 3,600 hp

Range: 7,500/11 Man: 58 men + 90 cadets

REMARKS: Used for navigation training. Similar to Polish and East German units of the Wodnik class, but have slightly larger superstructures, pilothouse one deck higher, and are not armed. Based on the Moma design.

 1 or more Mayak class Bldr: . . . (In serv. 1967-1974)

D: 1,050 tons (fl) S: 11 kts Dim: 54.2 (50.4 pp) × 9.3 × 3.6

A: 2/25-mm AA (II × 1) — 4/RBU-1200 ASW RL (V × 4) — 4/400-mm ASW TT (fixed) - 2/d.c. racks (6 d.c. each)

Electron Equipt: Radar: 1/Spin Trough - Sonar: HF, hull-mounted

M: 1 Karl Liebnecht 8NVD48 diesel; 1 prop; 800 hp Range: 9,400/11 Man: 60 tot., including students

TRAINING SHIPS (continued)



Mayak-class ASW training ship

Remarks: Late-production Mayak hull with basic ASW armament and sensors, apparently converted to provide basic ASW orientation or coastal ASW flotilla proficiency training. ASW RL mounted on forecastle, torpedo tubes in the waist area, depthcharge racks at the stern. The fish-hold area is used for accommodations. Due to low speed, would have little wartime utility.

TRIALS SHIPS AND CRAFT

♦ 1 (or more) Al'pinist class

Bldr: Yaroslavl SY (In serv. . . .)

OS-104



OS-104

JMSDF, 1985

D: 1,200 tons (fl) **S:** 13 kts **Dim:** 53.7 (46.2 pp) \times 10.5 \times 4.3

Electron Equipt: Radar: 1/Don-2, 1/. . . nav.

M: 1 Type 8NVD48-2U diesel; 1 CP prop; 1,320 hp Fuel: 162 tons Electric: 450 kw Range: 7,600/13 Man: . . .

Remarks: Modification of a 322-dwt stern-haul trawler. Gallows crane at stern resembles those used to handle submersible decompression chambers on T-58-class submarine rescue ships. Forecastle has been extended aft and supports 2-level deckhouse on starboard side. OS-104 is in the Pacific Fleet.

• 5 Potok class

Bldr: . . . (In serv. 1978- . . .)

OS-100

OS-138

OS-145

OS-225



OS-225

D: 750 tons (860 fl) S: 17 kts Dim: 71.0 × 9.1 × 2.5

A: 1/533-mm TT, 1/400-mm TT Electron Equipt: Radar: 1/Don-2

M: 2 diesels; 2 props; 4,000 hp Range: 5,000/12

REMARKS: OS - Opitnoye Sudno (Experimental Vessel). The design closely resembles the T-58 class, but the forecastle extends well aft. The trainable torpedo tubes are on the bow. A large crane aft is presumably used for retrieval. These ships are probably replacements for Modified T-43-class minesweepers, which had been used in torpedo trials since the 1950s.

1 or 2 Daldyn class



Daldyn class

1976

D: 360 tons (fl) S: 9 kts Dim: 31.7 × 7.2 × 2.8

Electron Equipt: Radar: 1/Spin Trough

M: 1 Type 8NVD 36U diesel; 1 prop; 305 hp Man: 15 tot.

Remarks: Modified Kareliya-class purse-seiner, possibly for use in mine countermea-

several T-43-class former minesweepers



T-43-class trials tender

1976

Remarks: Data as for minesweeper version. Some are disarmed former long-hulled minesweepers, while four or more 58-m versions were built as torpedo trials ships.

Note: There are probably a number of additional ships of various classes with OS-Opitnoye Sudno (Experimental Vessel) — pendants, either built for the purpose or former combatants or auxiliaries adapted for specific trials duties. The largest was OS-24, the former heavy cruiser Voroshilov, since scrapped.

TARGET SERVICE CRAFT

9 Osa-class target-control boats



Osa target controller

Remarks: Have Osa hull and propulsion. Used to operate craft shown below by remote control. Carry Square Tie and a High Pole-B IFF transponder. Communications antennas have been enhanced to provide for radio-control.

TARGET SERVICE CRAFT (continued)

♦ 8 Modified Osa-class missile targets



KTs-897, Osa target - with nets strung between the masts

8-80

Remarks: KTs—Kontrol'naya Tsel' (Controlled Target). Have Osa hull and propulsion. Crew departs when ship is in operation. Equipped with radar corner reflectors to strengthen target and two heat-generator chimneys to attract infrared homing missiles.

14 or more Shelon-class torpedo-retrievers Bldr: . . . (In serv. 1978- . . .)



Shelon class

L. & L. Van Ginderen, 6-85



Shelon variant - no dipping sonar or recovery ramp

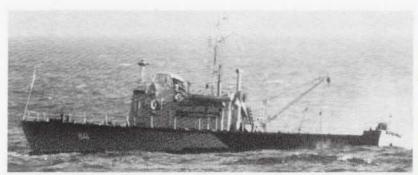
1983

D: 270 tons (fl) S: 24 kts Dim: $41.0 \times 6.0 \times ...$ Electron Equipt: Radar: 1/Spin Trough Sonar: 1/helicopter dipping-type IFF: 1/High Pole-B
M: 2 diesels; 2 props; ... hp Man: 40 tot.

Remarks: High-speed hull with a covered torpedo-recovery ramp aft. May be replacing the Poluchat-I class.

A new variant of the Shelon-class torpedo retriever design was sighted during 1983 while under tow from the Black Sea to Vladivostok. Unlike earlier units it does not have a slope to the weapons recovery area of the after portion of the deckhouse; it has no hatch in the deckhouse roof and no recovery hatch through the transom stern. The function of the craft, which has a crew of about 30, is unknown.

• up to 40 Poluchat-I-class torpedo-retrievers



Poluchat-I-class torpedo retriever

1982

D: 90 tons (fl) S: 18 kts Dim: 29.6 × 6.1 × 1.9

A: 2/14.5-mm AA (II × 1) in some

Electron Equipt: Radar: 1/Spin Trough - IFF: 1/High Pole-A

M; 2 M50 diesels; 2 props; 2,400 hp Range: 450/17; 900/10 Man: 20 tot.

Remarks: Carry numbers in the TL—Torpedolov (Torpedo-Retriever) series. Built in the 1950s. Recovery ramp aft. Some configured as patrol boats. Many exported abroad. See photo in section on Patrol Craft.

TARGET BARGES

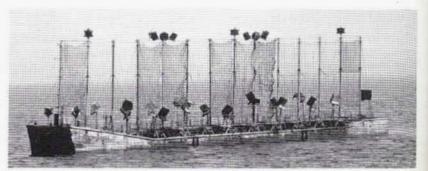


Soviet Navy built-for-the-purpose 107-m target barge, with numerous corner reflectors to enhance radar return U.S. Navy, 7-84



107-m target barge with two heat-generator arrays to attract IR homing missiles

G. Koop, 1985



Soviet Navy 64-meter catamaran gunnery target barge

G. Koop, 1985

DIVING TENDERS

* 8 or more Yelva class (In serv. 1973- . . .)



VM-268, Yelva class

G. Koop, 1985

D: 295 tons (fl) S: 12.4 kts Dim: $40.9 \times 8.0 \times 2.1$ Electron Equipt: Radar: 1/Spin Trough M: 2 Type 3D12A diesels; 2 props; 600 hp Man: 30 tot.

Remarks: Can support 7 divers at once to 60 m. Have a decompression chamber; some (but not all) also have a submersible decompression chamber. Replaced T-43 mine-sweepers built for the role. Several exported.

several Nyryat-1 class (In serv. late 1950s-mid 1960s)

D: 120 tons (fl) S: 12 kts Dim: 29.0 × 5.0 × 1.7 Electron Equipt: Radar: 1/Spin Trough M: 1 diesel; 1 prop; 450 hp Endurance: 10 days Range: 1,600/10 Man: 15 tot.

Remarks: Carry VM — Vodolaznyy Morskoy (Seagoing Diving Tender) — pendants. Same hull used for GPB-480-class inshore survey craft. Many exported.

* several Nyryat-2 class (In serv. 1950s)



PO-2 class - Nyryat-2 class similar

1975

D: 50 tons S: 9 kts Dim: $21.0 \times 4.5 \times ...$ Electron Equipt: Radar: 1/Spin Trough M: 1 Type 3D6 diesel; 1 prop; 150 hp Man: 10 tot.

Remarks: Uses same hull as PO-2-class utility launch; distinguishable by bulwarks to hull at bow and stern. Hundreds of PO-2 hulls were built; many were exported.

MISCELLANEOUS SERVICE CRAFT

• . . . PZhK-415-class fireboats Bldr: . . . U.S.S.R. (In serv. 1984- . . .)

D: 320 tons (fl) S: 12.5 kfts Dim: 36.53 × 7.80 × 2.20 M: 2 Type ZKD 12N-520 diesels; 2 CP props; 1,040 hp Range: 450/12.5 Electric: 400 kw Man: 20 tot.

Remarks: Four firefighting water monitors, two with 220 m³/hr capacity and two of 500 m³/hr, driven by two 750 m³/hr diesel-powered pumps. Foam and Freon extinguishing systems. Water curtain to protect boat. Can also be used for towing.

. . . Pozharney-I-class fireboats (In serv. 1950s)

D: 180 tons (fl) S: 17 kts Dim: $35.0 \times 6.2 \times 2.0$ M: 2 Type M50-F1 diesels; 2 props; 1,800 hp

• . . . Prometey-class large harbor tugs Bldr: Petrozavod SY, Leningrad

D: 319 tons (fl) S: 12 kts Dim: 29.8 (28.2 pp) × 8.3 × 3.2 M: 2 Type 6D30/50-4 diesels; 2 Kort-nozzle props; 1,200 hp Electric: 50 kw Range: 1,800/12 Man: 3-5 tot.



Prometey-class RB-202

1980

Remarks: Built 1970s-80s at Leningrad and Gorokhovets SY; some exported. Also in civil use. Have 14-ton bollard pull, ice-strengthened hull. Over 100 built since 1971.

 26 Sidehole-II-class harbor tugs 1970s)
 Bldr: Petrozavod SY, Leningrad (In serv.

D: 197 tons (fl) S: 10 kts Dim: 24.2 × 7.0 × 3.4 Electron Equipt: Radar: 1/Spin Trough M: 2 Type 6 CHN25/34 diesels; 2 vertical cycloidal props; 900 hp

REMARKS: Soviet class name: Peredovik. Also in civil use. Bollard pull: 10.5 tons. Naval units have RB—Rednyy Buksir (Roadstead Tug) pendants.

• 30 Sidehole-I-class harbor tugs (In serv. 1960s)

D: 183 tons (fl) S: 9 kts Dim: 24.4 × 7.0 × 3.3
Electron Equipt: Radar: 1/Spin Trough
M: 2 Type 6 CH25/34 diesels; 2 vertical cycloidal props; 600 hp

• . . . Tugur-class harbor tugs Bldr: Finland (In serv. 1950s)

D: 300 tons (fl) S: 12 kts Dim: 30.7 × 7.7 × 2.3
 M: 1 set reciprocating steam; 1 prop; 500 hp Boilers: 2

Remarks: Originally considered to be seagoing tugs; have MB pendants. Coal-fueled. 214 built.

FUEL-OIL LIGHTERS

• . . . Toplivo-2 class Bldr: U.S.S.R. and Egypt (In serv. 1958-1975)

D: 466 tons (1,180 tons fl) S: 10 kts Dim: 54.26 (49.40 pp) × 7.40 × 3.10 Electron Equipt: Radar: 1/Spin Trough
M: 1 Russkiy Dizel 6 DR30/50-5-2 diesel; 1 prop; 600 hp
Electric: 250 kw Fuel: 19 tons Range: 1,500/10 Man: 24 tot.

Remarks: 308 grt/508 dwt. Four cargo tanks, totaling 606 m³. Built in several versions including fuel-oil lighter, water lighter, and diesel-fuel lighter. Final series built at Alexandria, Egypt, with deliveries terminated by Soviet expulsion. Fully seagoing if required.

. . . Toplivo-3 class (In serv. 1950s)

D: 1,300 tons (fl) S: 9 kts Dim: 53.0 × 10.0 × 3.0 M: 1 diesel; 1 prop; 300 hp

Remarks: Low freeboard, low superstructure harbor craft. There are probably a number of the smaller (450-ton fl) Toplivo-1-class harbor fuel lighters remaining also.

ACCOMMODATIONS BARGES

. . . Bolva series Bldr: Valmet Oy, Helsinki, Finland



Myass - Bolva-III class

Valmet, 1978

D: 6,500 tons (fl) Dim: 110.9 × 13.8 × 2.8 Man: 374-394 total berthing

Remarks: First series of 8 Bolva-I built 1960-63, second series of 21 Bolva-II built 1963-72, with hangar-like auditorium built atop superstructure aft. Bolva-III built 1971-. . . , with 34 completed to date, 3 more ordered 1983. Many went to civilian service.

ACCOMMODATIONS BARGES (continued)

. . . Vyn-class (In serv. 1960s)

D: 3,000 tons (fl) **Dim:** 92.0 × 13.4 × 4.6 **Man:** Approx. 200

Remarks: Converted from cargo barges built in Finland in the late 1940s-early 1950s. One was based in Somalia during the mid-1970s. Apparently support submarines, as there is a torpedo-loading hatch. Pendant numbers in the PKZ—Plavuchiya Kazarma (Floating Barracks) series.

CIVILIAN SPACE EVENT SUPPORT SHIPS

Note: The ships listed below are subordinated to the Academy of Sciences and are primarily intended to provide communications relay services with manned satellites. The large satellite support/tracking ship Marshal Nedelin, completed 1983, is a naval unit. The eight naval-subordinated Vytegrales-class ships are also used in space event work, as have been several naval Moma- and Samara-class survey ship/buoy tenders.

4 Kosmonavt Pavel Belyayev class

Bldr: Zhdanov SY, Leningrad

| | in serv. | Conv |
|--|----------|------|
| Kosmonavt Georgiy Dobrovolskiy (ex-Semyon Kosinov) | 1968 | 1978 |
| Kosmonaut Pavel Belyayev (ex-Vytegrales) | 1963 | 1977 |
| Kosmonavt Viktor Patseyev (ex-Nazar Gubin) | 1968 | 1978 |
| Kosmonaut Vladilav Volkov (ex-Yeniseiles) | 1964 | 1977 |



Kosmonavt Viktor Patseyev

9-84



Kosmonavt Vladilav Volkov

L. & L. Van Ginderen, 11-83

D: 9,000 tons (fl) S: 16 kts Dim: 121.8 (113.0 pp) × 16.7 × 7.3 Electron Equipt: Radar: 1/Don-2, 1/Okean, 1/Mod. Kite Screech M: 1 Bryansk-Burmeister & Wain 950 VTBF 110 diesel; 1 prop; 5,200 hp Fuel: 350 tons Range: 7,400/15 Man: 90 tot.

Remarks: 4,482 grt/2,010 dwt. Like the less-elaborately altered *Borovichi* group, these are conversions from *Vytegrales*-class timber carriers, performed at the building yard. Named for cosmonauts killed on missions. Have large, stabilized "Quad Spring" communications array amidships and three smaller satellite communications arrays. Based in the Baltic.

♦ 1 Kosmonavt Yuriy Gagarin class

Bldr: Baltic SY, Leningrad

Kosmonavt Yuriy Gagarin (In serv. 12-71)



Kosmonavt Yuriy Gagarin

1983



Kosmonavt Yuriy Gagarin

L. & L. Van Ginderen, 7-82

D: 53,500 tons (fl) S: 18 kts Dim: 231.7 (213.9 pp) × 31.1 × 10.0 Electron Equipt: Radar: 1/Don-Kay, 1/Okean

M: 1 set GT, electric drive; 1 prop; 19,000 hp Boilers: 2 Range: 24,000/17.7 Man: 160 crew + 180 scientists-technicians

Remarks: 32,291 grt/31,300 dwt. A Sofiya-class tanker hull adapted prior to construction. Has two 27-m-diameter Ship Shell and two 12.5-m-diameter Ship Bowl stabilized communications dishes, 2 Vee Tube HF, and four Quad Ring arrays. Bow- and stern-thrusters. Three swimming pools, 300-seat theater; gymnasium. Endurance: 120 days. Home port: Odessa.

• 1 Akademik Sergey Korolev (In serv. 1970)



Akademik Sergey Korolev

French Navy, 4-80

D: 21,465 tons (fl) **S:** 17 kts **Dim:** 181.9 (167.9 pp) \times 25.0 \times 7.9

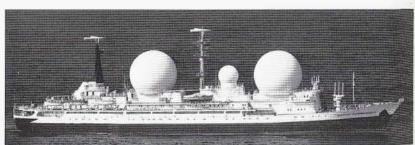
Electron Equipt: Radar: 2/Don-Kay

M: 1 Bryansk-Burmeister & Wain diesel; 1 prop; 12,000 hp Range: 22,500/17 Man: 188 crew + 170 scientists-technicians

Remarks: 17,114 grt/7,067 dwt. Has 80 "laboratories." Space communications antennas include 2 Ship Bowl and 1 Ship Globe and 4 Quad Ring. Based in the Far East.

♦ 1 Kosmonavt Vladimir Komarov class Bldr: Kherson SY

KOSMONAVT VLADIMIR KOMAROV (ex-Genichevsk) (In serv. 1966)



Kosmonavt Vladimir Komarov

1984

D: 17,500 tons (fl) **S:** 17.5 kts **Dim:** 155.7 (146.4 pp) \times 22.3 \times 8.6 **Electron Equipt:** Radar: 2/Don-Kay

M: 1 Bryansk-Burmeister & Wain diesel; 1 prop; 9,000 hp Fuel: 1,656 tons Range: 16,700/17.5 Man: 254 tot.

Remarks: 13,935 grt/7,065 dwt. Converted from a *Poltava*-class bulk carrier at Baltic Shipyard, Leningrad, completing in 7-67. Hull amidships replaced by a broader section giving a distinct discontinuity to the lines fore and aft. Space communications antennas include two Ship Globe and 1 Ship Wheel, 2 Quad Ring, and 1 larger multiple yagi array. Two Vee-Cone HF antennas are carried at the mastheads. Based at Odessa.

♦ 4 Borovichi class Bldr: Zhdanov SY, Leningrad, & Vyborg SY (In serv. 1965-66)

Borovichi (ex-Svirles) Kegostrov (ex-Taymyr) Morzhovets Nevel



Borovichi

L. & L. Van Ginderen, 3-85



Morzhovets

6-84

D: 7,600 tons (f) **S:** 15.4 kts **Dim:** 121.9 (113.0 pp) \times 16.7 \times 4.7 **Electron Equipt:** Radar: 2/Don-2

M: 1 Bryansk-Burmeister & Wain 950 VTBF 110 diesel; 1 prop; 5,200 hp

Fuel: 325 tons Range: 7,400/15 Man: 78 tot.

Remarks: 5,277 grt/1,834 dwt. Space communications antennas include 1 Quint Ring and 4 Quad Ring yagi arrays, and a Vee Cone HF antenna is carried aft. Home-ported in the Baltic. Retain forward cargo hold. Converted 1967 at Zhdanov SY, Leningrad, from Vytegrales-class timber carriers.

CIVILIAN SCIENTIFIC RESEARCH SHIPS

The ships listed below are subordinated to a variety of scientific organizations. Many perform military-related research. Major fisheries research ships are presented, but a large number of smaller trawlers of the Mayak and similar classes are omitted for reasons of space. Foxtrot-class diesel-powered submarines have also supported civilian research in recent years. Ships are presented in reverse order of class introduction.

♦ 0 (+2) . . . class Bldr: Rauma-Repola, Savonlinna

D: . . . **S**: 11 kts **Dim**: 49.80 (46.40 pp) × 10.50 × 2.00

Electron Equipt: Radar: . . . — Sonar: . .

M: 2 diesels, electric drive; 2 rudder-props; 1,114 hp

Fuel: 95 tons Man: 30 tot.

Remarks: 920 grt. Ordered 28-2-85. For hydrographic research.

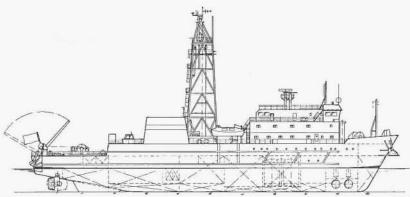
◆ 2 new construction Bldr: Hollming, Rauma, Finland

D: 6,000 tons S: 15 kts Dim: . . . (117.10 pp) \times 18.20 \times 5.90 Electron Equipt: . . .

M: 2 SEMT-Pielstick/Russkiy Dizel 6PC2.5 L400 diesels; 2 CP props; 7,000 hp Range: . . . Man: . . .

REMARKS: Ordered 13-5-85.

♦ 2 Bavenit class Bldr: Hollming, Rauma, Finland



Bavenit

Hollming, 1984

D: 5,300 tons **S:** 12.75 kts **Dim:** 85.80 (75.30 pp) × 16.80 × 5.60

Electron Equipt: . . .

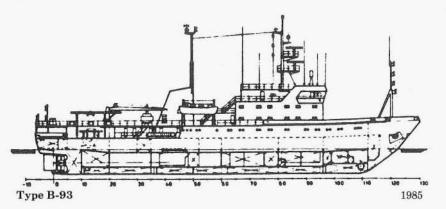
M: 4 Russkiy Dizel EG-74 (1,700 hp) diesels, electric drive; 2 Aquamaster rudder-props, 4,000 hp

Range: 8,000/12 Man: 65 tot. Endurance: 50 days

Remarks: Ordered 13-4-84 for use by the Far Eastern Academy of Sciences Institute of Thermal Physics. Able to drill to 200-m depths in waters up to 300-m deep, using a 35-m derrick drill support amidships. A-frame trawl gantry at the stern. Ice-reinforced hulls. Two 1,360-hp bow-thrusters plus the two U.S.-supplied Aquamaster, 360-deg.-pivoting props give a dynamic position-keeping capability.

◆ 2 (+7) Type B-93 geophysical research ships Bldr: Szczecin SY, Szczecin, Poland

| | In serv. | | In serv |
|-------------------|----------|---|---------|
| AKADEMIK FERSMAN | 1985 | N | |
| AKADEMIK SHATSKIY | 1985 | N | |
| N | | N | |
| N | | N | |
| N | | | |



D: Approx. 3,300 tons (fl) S: 14.5 kts Dim: 81.85 (73.50 pp) × 14.80 × 5.00 Electron Equipt: Radar: 2/. . . nav. — Sonar: 6-km-long seismic array M: 1 Zgoda-Sulzer 6 ZL 40/48 diesel; 1 Kort-nozzle CP prop; 4,200 hp Range: 12,000/. . . Man: 60 (accommodations)

REMARKS: 1,000 dwt. A series of ships to support the "shelf" research program to search for offshore gas and oil deposits. Ice-strengthened hulls, stern ramp for towing seismic array. Bow-thruster. Geophysical, gravimetric, and chemical laboratories. NAVSAT receiver. First ship launched 24-1-85, second on 19-7-85.

♦ 2 hydrographic echo-sweeping vessels Bldr: Rauma-Repola, Savonlinna, Finland

Laid down L In serv N. . . 9-1-85 . . . 1985 N. . . 24-1-85 . . . 1985

D: 400 tons (fl) **S:** . . . **Dim:** $32.90 \times 9.10 \times 2.20$

M: 2 diesels; 2 props; 590 hp

Remarks: 50 dwt. Ordered 12-4-84. Intended to operate as a pair, under computerizedcontrol.

 1 Pulkovskiy Meridian class Bldr: Chernomorskiy SY, Nikolayev (In serv.

AKADEMIK ALEKSANDR KARPENSKIY



Akademik Aleksandr Karpenskiy

French Navy, 11-84

D: 5,620 tons (fl) **S:** 17 kts **Dim:** 103.10 (94.00 pp) \times 16.00 \times 5.90

Electron Equipt: Radar: 1/Don-2, 1/Okean

M: 2 Sgoda-Sulzer 6L52511PV diesels; 1 CP prop; 6,900 hp Range: 7,000/14.5 Electric: 450 kw Man: Approx. 90 tot.

Fuel: 1,150 tons Endurance: 60 days

REMARKS: One of a class of two dozen or more stern-haul factory trawlers built since 1974, adopted for fisheries-related oceanographic research.

 6 Akademik Boris Petrov class Bldr: Hollming, Rauma, Finland

| AKADEMIK BORIS PETROV | Laid down 7-4-83 | L 7-7-83 | In serv. 29-6-84 |
|---------------------------|---------------------|-------------|---------------------|
| AKADEMIK M.A. LAVRENT'YEV | 18-8-83 | 28-10-83 | 12-10-84 |
| AKADEMIK NIKOLAI STRAKHOV | 9-11-83 | 3-2-84 | 14-5-85 |
| AKADEMIK OPARIN | | 1-2-85 | |
| Akademik N | 4.4.4 | | |
| Akademik N | 2.4.4 | | |



Akademik Oparin

L. & L. Van Ginderen, 1-86

D: 2,550 tons (fl) S: 14.75 kts Dim: 75.45 × 14.70 × 4.70

Electron Equipt: Radar: 1/Okean, 1/. . . nav.

M: 2 SEMT-Pielstick/Russkiy Dizel GPC 2.5 L400 diesels; 1 CP prop; 3,500 hp Range: . . . Man: 74 tot.

Remarks: First three ordered 17-6-82 for the Academy of Sciences Vernadskiy Institute for Geochemistry and Analytical Chemistry. Second trio ordered 28-6-84. Intended to conduct geophysical and hydrophysical research worldwide. Bow-thruster; bulbous forefoot to bow. Carry MARISAT SATCOMM system.

• 1 geological research catamaran 10-83)

Bldr: . . . SY, Vladivostok (In serv.

GEOLOG PRIMOR'YE

D: . . . S: 9 kts Dim: 85.8 (75.3 pp) × 16.8 × 5.6 M: 2 diesels; 2 props; . . . hp-2/1,150-hp bow-thrusters

Remarks: 2,000 dwt. Intended for mineral resources research. Able to 4-point moor.

| ◆ 10 (+4) Akademik Shuleykin class | | Bldr: Laivateollisuus, Turku, Finland | | |
|--|----------------------------------|---|---|--|
| AKADEMIK SHULEYKIN PROFESSOR PAVEL MOLCHANOV AKADEMIK SHOKALSKIY | In serv. 1982 1982 1982 | AKADEMIK GAMBURTSEV PROFESSOR GOLITSYN PROFESSOR POLSHAOV | In serv. 20-12-83 22-2-84 7-4-84 | |
| Professor Khromov | 1983 | GEOLOG DMITRIY | | |
| Professor Mul'tanovskiy | 7-83 | Nalyvkin | 14-2-85 | |

| | In serv. | | In serv. |
|--------------------|----------|---|----------|
| AKADEMIK ALEKSANDR | | N | *** |
| SIDORENKO | 18-6-65 | N | |
| N | | N | 4 4 4 |



Akademik Shokalskiy

French Navv. 1-83

D: 2,140 tons (fl) S: 14 kts Dim: 71.6 (64.3 pp) × 12.8 × 4.8

Electron Equipt: Radar: 1/Okean M, 1/Okean B

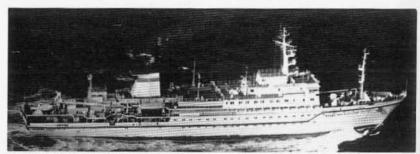
M: 2 Gor'kiy Type G-74 diesels; 2 CP props; 3,120 hp Electric: 600 kVA Range: 14,000/12 Man: 38 crew + 38 scientists Endurance: 50 days

Remarks: 1,800 grt/620 dwt. Academy of Sciences hydrometeorological reporting ships, equipped for cold-weather operations. Home ports: Shuleykin at Leningrad, Shokalskiy and Khromov at Vladivostok, Molchanov at Murmansk, and Mul'tanovskiy at Leningrad. Second five ordered 1982 for the Ministry of Geology for seismic survey duties; they are of 1,650 grt/600 dwt, draw 4.50 m, and can carry a submersible robot. A third group of four was ordered 1-85. All have a 200-hp bow-thruster.

1 Akademik Aleksey Kirov class

Bldr: Okean SY, Nikolayev

AKADEMIK ALEKSEY KIROV (In serv. 1981)



Akademik Aleksey Kirov

U.S. Navy, 9-83

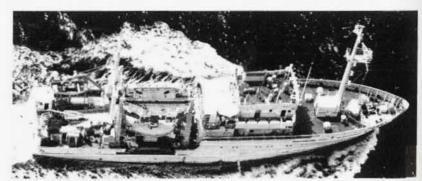
D: 9,920 tons (fl) S: 16 kts Dim: 124.7 (110.0 pp) × 17.5 × 7.2 Electron Equipt: Radar: 1/Okean A, 1/Okean B, 1 Palm Frond M: 2 Type 58D-6R diesels; 2 CP props; 9,000 hp Range: 10,000/16 Electric: 3,600 kw Man: 117 crew, 32 scientists

Remarks: 6,358 grt/1,930 dwt. Supports a 13.4-m submersible, hangared amidships, with a large door and internal handling gantry to port. The submersible weighs 10 tons and can dive to 1,500 m. The ship has bow- and stern-thrusters, with a "Zaliv" automated control system. Home-ported at Sevastopol.

• 5 modified Al'pinist class Bldr: Yaroslavl' SY

Rift (In serv. 1982) GIDROBIOLOG (In serv. 1983) DIORAT (In serv. 1983) DIABAZ (In serv. 1983)

GIDRONAVT (In serv. 1983)



Rift-with Pisces submersible

U.S. Navy, 9-32

D: 1,185 tons (fl) S: 12 kts Dim: 53.7 × 10.5 × 4.4 Electron Equipt: Radar: 1/Spin Trough M: 1 Type 8NVD48-2U diesel; 1 CP prop; 1,320 hp Electric: 778 kw Range: 6,900/12 Man: 26 crew + 11 scientists

Remarks: Al'pinist stern-haul trawlers modified while under construction to carry and support a manned submersible beneath a traveling double gantry crane amidships. Employed on oceanography, hydrology, and marine ecology research by the Ministry of Fisheries. Equipped with bow- and stern-thrusters. In late 1983 Rift, designed for the Tinro-2 submersible, was carrying the Argus submersible and a Zvak-4M towed drone submersible. Diorat and Diabaz are used for geophysical research and have a 15-m drill tower for the 9-ton ZIF-1200 drill in place of the submersible facility.

* 3 Vityaz' class

Bldr: Adolf Warski SY, Szczecin, Poland

VITYAZ' (In serv. 1981) AKADEMIK A. NESMEYANOV (In serv. 1982) AKADEMIK ALEXANDR VINOGRADOV (In serv. 1983)



Vityaz'

French Navy, 3-83



Akademik A. Nesmyanov

U.S. Navy, 7-83

D: 5,700 tons (fl) **S:** 16 kts **Dim:** 110.9 (100.0 pp) \times 16.6 \times 5.7

Electron Equipt: Radar: 1/Don-2, 1/Okean

M: 2 Zgoda-Sulzer 6ZL140/48 diesels; 2 CP props; 6,500 hp

Electric: 925 kVA Range: 16,000/16 Man: 61 crew + 65 scientists

Remarks: 4,940 grt/1,790 dwt. Operated by the Academy of Sciences for seabed research, exploring for exploitable natural materials to 10,000-m depths. Have 25 laboratories; 60-day endurance. Carry the *Argus* submersibles: 8 tons, 600-m diving depth, 3-kt. max. speed, crew of 3, with an 8-hour powered endurance. *Vityaz'* also carries a submersible decompression chamber for 3 divers. *Vityaz'* home-ported at Sevastopol, *Nesmeyanov* at Vladivostok.

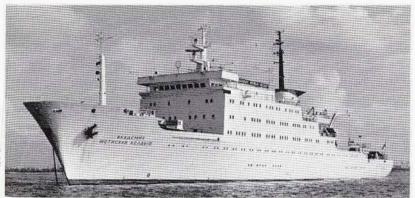
• 1 Akademik Keldysh class

Bldr: Hollming SY, Rauma, Finland

AKADEMIK MSTISLAV KELDYSH (In serv. 12-80)

D: 5,500 (fl) S: 16 kts Dim: 122.2 × 17.8 × 5.4 M: 4 Wärtsilä Vasa 824TS diesels; 2 props; 5,840 hp Range: 20,000/165 Man: 50 crew + 80 scientists

Remarks: 5,500 grt/1,500 dwt. Operated by the Academy of Sciences for general-purpose oceanography. Has 17 internal laboratories and can carry 4 containerized laboratories. Home-ported at Kaliningrad. Carries a *Pisces*-class research submersible capa-



Akademik Mstislav Keldysh

L. & L. Van Ginderen, 3-84



Akademik Mstislav Keldysh

L. & L. Van Ginderen, 7-85

ble of descending to 2,000 m with a crew of three. Passive tank anti-rolling system. Bow-thruster and a 360-deg.-rotatable Aquamaster stern propulser.

♦ 1 modified Dobrynya Nikitich class

Bldr: Admiralty SY, Leningrad

Отто Sнмірт (In serv. 17-7-79)

D: 2,528 tons (3,600 fl) **S:** 14.8 kts **Dim:** 73.0 (62.0 pp) \times 18.0 \times 6.6

M: 3 Type 13D100 diesels, electric drive; 2 props; 5,440 hp

Electric: 1,875 kw Range: 11,000/14 Man: 32 crew + 20 scientists

Remarks: 2,828 grt/1,095 dwt. Operated by the Arctic/Antarctic Institute. Can break 60-cm ice at 2-kt. speeds; 50 days endurance. Has 14 laboratories. The naval research icebreaker *Vladimir Kavrayskiy* has the same hull and propulsion, while two standard units of the *Dobrynya Nikitich* class, *Petr Pakhtusov* and *Georgiy Sedov*, are also employed on research tasks as needed. Endurance: 60 days.

1 sea-mining research ship

Bldr: . . . , U.S.S.R.

Shelf 1 (In serv. 1976)

D: . . . S: 16.5 kts Dim: 62.6 × 10.5 × 3.1

M: 2 12-cyl. diesels; 2 props; . . . hp Range: . . . Man: . . .

REMARKS: 669 grt/193 dwt. Built to test ocean-shelf mining techniques to 100-m depths. Has a 5-ton crane.

• 1 Antarctic research and supply ship

Bldr: Kherson SY

MIKHAIL SOMOV (In serv. 1975)



Mikhail Somov

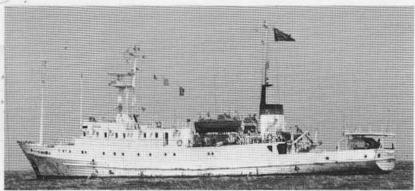
L. & L. Van Ginderen, 1981

D: 5,000 tons (14,000 fl) S: 20 kts Dim: 133.1 (123.3 pp) \times 18.8 \times 9.2 Electron Equipt: Radar: 2/Don-2 M: 2 diesels, electric drive; 2 props; 7,150 hp Range: 10,000/16.4 Man: 100 tot.

Remarks: 7,714 grt/8,445 dwt. Operated by the Arctic and Antarctic Institute. Essentially an *Amguema*-class icebreaking passenger/cargo ship intended for resupply duties to Soviet research stations in the Antarctic. Commercial sisters, including *Kapitan Myshevskiy* in 1983, are also used for Antarctic resupply.

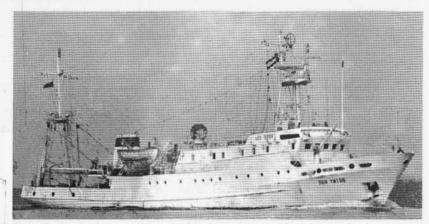
♦ 18 (+ . . .) Valerian Uryvayev class Bldr: Khabarovsk SY

| | In serv. | | In serv. |
|-------------------|----------|---------------------|----------|
| Снаууо | 1982 | Poisk | 1974 |
| Егм | 1982 | PROFESSOR FEDYNSKIY | 1982 |
| Dalniye Zelentsy* | 1978 | RUDOLF SAMOYLOVICH* | 1977 |
| Geofizikh | 1983 | Valerian Uryvayev* | 1974 |
| ISKATEL' | 1977 | VEKTOR | 1980 |
| ISSLEDOVATEL' | 1977 | VSEVLOD BEREZKIN* | 1975 |
| LEV TITOV* | 1980 | Vulkanolog | 1976 |
| Modul | 1981 | Vyacheslav Frolov* | 1979 |
| Morskoy Geofizik | 1975 | YAKOV GAKKEL* | 1975 |



Geofizikh-mast aft, large winch on stern

French Navy, 2-84



Lev Titov - hydromet version, End Tray amidships

L. & L. Van Ginderen, 11-83

D: 1,050 tons (fl) **S:** 11 kts **Dim:** $54.8 \times 9.5 \times 4.2$ Electron Equipt: Radar: 1/Don-2, 1/Okean, 1/End Shield (on 7) M: 1 Karl Liebnecht diesel; 1 CP prop; 880 hp Electric: 450 kw Range: 10,000/11 Man: 40 crew + 12 scientists

Remarks: 697 grt/350 dwt average. Variously subordinated; those operated for the Institute of Hydrometeorology(*) have an End Shield radiosonde balloon-tracking radar. Others operate for the Arctic and Antarctic Institute or the Academy of Sciences. Have 8 laboratories. Some have twin kingposts at the stern, others a single mast aft, and still others have twin kingposts just abaft the stack. Home-ported: Berezkin, Zelentsy at Murmansk; Titov, Samoylovich in the Baltic; Issledovatel', Modul, Vektor, Gakkel in the Black Sea; Elm in the Caspian; remainder in the Far

 3 modified Passat-class weather-reporting ships Szczecin, Poland (In serv. 1971)

Bldr: Adolf Warski SY,

ERNST KRENKEL (ex-Vikhr) GEORGIY USHAKOV (ex-Schkval)

VIKTOR BUGAYEV (ex-Poriv)



Georgiy Ushakov

L. & L. Van Ginderen, 9-83

D: 4,200 tons (fl) S: 16 kts Dim: 100.1 (88.4 pp) × 14.8 × 5.1

Electron Equipt: Radar: 2/Don-2, 1/End Tray M: 2 Cegielski-Sulzer diesels; 2 CP props; 4,800 hp

Electric: 1,089 kw Fuel: 652 tons Range: 15,000/16 Man: 110 crew + 63 scientists

Remarks: 3,311 grt/1,450 dwt. Improved version of the Passat-class hydrometeorological reporting ships. Facilities for launching and tracking radiosonde balloons and rockets. All home-ported in the Black Sea.

1 shipbuilding techniques trials ship

Bldr: Black Sea SY, Nikolayev

IZUMRUD (In serv. 1970)



Izumrud

Ambrose Greenway

D: 5,170 tons (fl) S: 14 kts Dim: 99.4 (90.0 pp) × 14.0 × 5.4 Electron Equipt: Radar: 1/Don-2, 1/Okean, 1/Low Sieve

M: 4 diesels, electric drive; 1 prop; 4,000 hp Range: . . . Man: 110 crew + 40 scientists

Remarks: 3,862 grt/2,640 dwt. A modified version of the Tavriya-class passenger/cargo ship, built for the Ministry of Shipbuilding for trials with structural concepts, coatings, navigational and communications systems. Portions of the superstructure are made from glass-reinforced plastic.

• 19 Dmitriy Ovtsyn class

Bldr: Laivateollisuus SY, Abo, Finland

| | In serv. | | In serv |
|---------------------|----------|-------------------------|---------|
| DMITRIY LAPTEV | 1970 | Professor Bogorov* | 1976 |
| DMITRIY OVTSYN | 1970 | Professor Kurentsov* | 1976 |
| DMITRIY STERLEGOV | 1971 | PROFESSOR SHTOKMAN* | 1979 |
| EDUARD TOLL | 1972 | Professor Vodyanitskiy* | 1976 |
| FEDOR MATISEN* | 1976 | SERGEY KRAVKOV | 1974 |
| Georgiy Maksomov* | 1977 | STEPAN MALYGIN | 1970 |
| IVAN KIREYEV* | 1977 | VALERIAN ALBANOV | 1972 |
| NIKOLAY KOLOMEYTSEV | 1972 | VLADIMIR SUKHOTSKIY | 1974 |
| NIKOLAY YEVGENOV | 1974 | YAKOV SMIRNITSKIY* | 1977 |
| PAVEL BASHMAKOV* | 1977 | | |



Ivan Kireyev - seismic research

L. & L. Van Ginderen, 3-81



Professor Vodyanitskiy

L. & L. Van Ginderen, 3-84

D: 1,600 tons (fl) S: 14 kts Dim: 68.7 (60.0 pp) × 11.9 × 4.1 Electron Equipt: Radar: varies: 2/Don-2, or 1/Okean, or 1/Don, 1/Don-2

M: 1 Humboldt-Klockner-Deutz diesel; 1 CP prop; 2,200 hp Fuel: 180 tons Electric: 595 kw Range: 9,700/13.5 Man: 42 tot.

Remarks: 1,134 grt/295 dwt. Ships delivered 1976 and later(*) are considered a second series, but are very similar. Fourteen are subordinated to the Ministry of the Maritime Fleet for hydrographic survey and seismic survey duties, the remainder to the Acad-

emy of Sciences or to the Hydrometeorological service (units with "Professor" names). Bogorov built at Turku.

♦ 23 Agat class Bldr: . . . (In serv. 1969-79)

| AGAT | GIDROLOG | MONATSIT | TANTAL |
|-----------|----------|----------|---------|
| AKVANAVT | GRANAT | Morion | TOPAZ |
| BERILL | ILMENIT | PLUTON | TSIRKON |
| Borey | KARTESH | RADON | Uran |
| Brig | Kvarts | RUTIL | YANTAR |
| GEOTERMIK | METAN | SHELF | |



Shelf

L. & L. Van Ginderen, 9-83

D: 350 tons (fl) S: 9.5 kts Dim: $34.0 \times 7.1 \times 2.6$ Electron Equipt: Radar: 1/navigational M: 1 Karl Liebnecht 8-cyl. diesel; 1 prop; 300 hp Electric: 411 kw Range: 1,600/9 Man: . . .

Remarks: 166 grt/35 dwt. A general-purpose oceanographic tender version of the Maneurennyy-class seiner fishing boat. Endurance: 7 days. Subordination about equally divided between the Ministry of Geology, Academy of Sciences, and the Hydrometeorological Institute.

♦ 11 Atlantik-I* and -II-class fisheries research ships Stralsund, East Germany (In serv. 1968-72) Bldr: Volkswerft,

| ALBA* | GERAKL' | Professor Mesyatsev |
|----------|------------|---------------------|
| ARTEMIDA | KAMENSKOYE | Shantar |
| EVRIKA | MILOGRADVO | ZOND |
| E.o. num | Drannegen | |

D: 2,240 tons (3,360 fl) S: 13.7 kts Dim: 82.2 (73.0 pp) × 13.6 × 5.0
 Electron Equipt: Radar: 2/Don-2
 M: 2 Karl Liebnecht diesels; 2 CP prop; 2,350 hp

Electric: 1,660 kw Fuel: 600 tons Range: . . . Man: 85 tot.

Remarks: Average 2,242 grt/1,025 dwt. Stern-haul factory trawlers adapted for fisheries-related oceanographic research; subordinated to the Ministry of Fisheries. Have a 75-hp bow-thruster.

♦ 6 Passat-class hydrometeorological reporting ships Bldr: Adolf Warski SY, Szczecin, Poland

| | In serv. | | | In serv. | | In serv. |
|--------|----------|-------|---|----------|--------|----------|
| Musson | 1968 | VOLNA | | 1968 | Priboy | 1969 |
| PASSAT | 1968 | OKEAN | 4 | 1969 | Priliv | 1970 |



Priboy - Vee Cone HF antenna atop foremast

L. & L. Van Ginderen, 1984

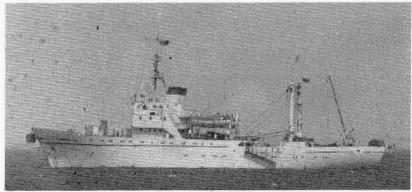
D: 4,145 tons (fl) S: 16 kts Dim: 96.9 (88.4 pp) \times 13.8 \times 5.3 Electron Equipt: Radar: 2/Don-2, 1/End Tray (radiosonde tracker) M: 2 Cegielski-Sulzer 8TD48 diesels; 2 CP props; 4,800 hp Electric: 800 kw Range: . . .

Man: 50-55 crew + 50-60 scientists and technicians

Remarks: 3,284 grt/1,170 dwt. B-88 design, with 23 laboratory spaces. Have End Tray radiosonde tracking antenna aft and can launch weather balloons and atmospheric probe rockets. 45-day endurance. Subordinated to the Hydrometeorological Institute. Home-ported: Vladivostok, except Musson, Passat: Odessa; Priliv: Baltic. Vee-series HF antenna atop foremast on Priboy, Priliv, and Okean.

◆ 1 Sever class Bldr: Black Sea SY, Nikolayev

Sever (In serv. 1967)



Sever

1982

D: 1,780 tons (2,530 fl) S: 13.1 kts Dim: 71.0 (64.0 pp) × 13.1 × 5.0 Electron Equipt: Radar: 1/Don-2

M: 3 diesels, electric drive; 1 CP prop; 3,000 hp Fuel: 350 tons Range: 11,000/13 Man: 51 tot.



Passat

Remarks: 1,940 grt/706 dwt. Operated by the Ministry of Geophysics in geological oceanography studies. Was originally the prototype for a class of stern-haul trawlers, but no others were built. Endurance: 50 days. Operates in the Black Sea.

♦ 1 modified Nereida class Bldr: Khabarovsk SY

AKADEMIK PETROVSKIY (ex-Moskovskiy Universitet) (In serv. 1966)



Akademik Petrovskiy

U.S. Navy, 7-81

D: 922 tons (fl) S: 11 kts Dim: 54.1 (52.8) × 9.3 × 3.7 Electron Equipt: Radar: 1/Don-2, 1/Spin Trough

M: 1 diesel; 1 CP prop; 780 hp

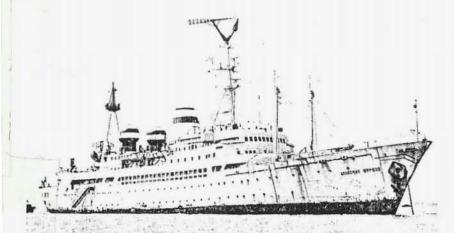
Range: 10,000/11 Man: 41 crew + 10 scientists

Remarks: 577 grt/277 dwt. Operated by Moscow State University for studies in oceanology, hydrobiology, ichthyology, and seismology. Modernized and renamed 1970. Large numbers of this class (unmodified) and the very similar Mayak class perform fisheries research duties.

◆ 7 Akademik Kurchatov class
Germany (In serv. 1966-68)

Bldr: Mathias Thiesen Werft, Wismar, East

AKADEMIK KOROLEV AKADEMIK KURCHATOV AKADEMIK SHIRSHOV AKADEMIK VERNADSKIY DMITRIY MENDELEYEV PROFESSOR VIZE PROFESSOR ZUBOV



Akademik Shirshov—note twin radomes amidships, elaborate tracking radar antenna aft

L. & L. Van Ginderen, 1983



Professor Vize — hydrometeorological reporting ship with Vee Bars HF antenna atop foremast L. & L. Van Ginderen, 1-84



Akademik Vernadskiy — scientific unit, with tracking radar removed; note stack-cap U.S. Navy, 7-83

D: 6,986 tons (fl) S: 18.3 kts Dim: 124.2 (110.0 pp) \times 17.0 \times 6.1 Electron Equipt: Radar (standard): 2/Don-2, 1 or 2/tracking radars M: 2 Halberstadt-M.A.N. 6KZ 57/60 diesels; 2 props; 8,000 hp

Fuel: 1,415 tons Electric: 1,840 kw

Range: 20,000/18 Man: 80 crew + 74 scientists & technicians

Remarks: 5,460 grt/1,986 dwt. Vary considerably in equipment. Kurchatov, Vernadskiy, and Mendeleyev subordinate to the Academy of Sciences, the others to the Hydrometeorological Institute. The weather ships originally had radiosonde balloon and rocket launching facilities. End Tray tracking radar, and two theodolite trackers, one of which was a converted naval Wasp Head director (Shirshov has two side-by-side tracking radars in radomes amidships and a new type of tracking radar aft, while Korolev has had the twin radars, and occasionally the radomes, removed). The other three have a large crane aft for handling oceanographic gear and small submersibles; they also carry one End Tray. The weather ships also have Vee Bars HF antennas atop the foremast. Korolev and Mendeleyev have an Okean-series navigational radar in lieu of one Don-2. All have two 190-hp bow-thrusters, and a 300-hp Pleuger active rudder. Unlike their naval half-sisters of the Abkhaziya class, these ships have no helicopter facilities. Home ports: Korolev, Mendeleyev, and Shirshov at Vladivostok, Vernadskiy in the Black Sea, and the others in the Baltic.

♦ 4 Tropik A class Bldr: V.E.B. Volkswerft, Stralsund, East Germany

In serv. In serv. KALLISTO 1964 PEGAS 1963
NAUKA 1966 RADUGA 1966



Kallisto

L. & L. Van Ginderen, 3-83

D: Approx. 3,000 tons (fl) S: 12.5 kts Dim: 79.8 (71.0 pp) × 13.2 × 5.2

Electron Equipt: Radar: 2/Don-2

M: 2 Karl Liebnecht 8-cyl, diesels; 1 prop; 1,680 hp Electric: 1,080 kw Fuel: 400 tons Range: . . .

Man: 42 crew + 29 scientists

Remarks: 2,435 grt/988 dwt. Former stern-haul factory trawlers. Approximately 70 sisters operate as fishing boats. *Pegas* operates for the Academy of Sciences, *Kallisto* for the Oceanographic Science Research Institute, and the other two for the Ministry of Fisheries.

• 2 modified Bologoe-class trawlers Bldr: Leninskaya Kuznitsa SY, Kiev (In serv. 1963)

AKADEMIK ARCHANGELSKIY YURIY GODIN

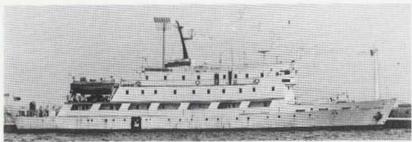
D: 580 tons (fl) S: 10 kts Dim: 43.6 × 7.6 × 3.0

Electron Equipt: Radar: 1/Spin Trough M: 1 Karl Liebnecht diesel; 1 prop; 450 hp Range: . . . Man: 35 crew + 13 scientists

Remarks: 416 grt/142 dwt. Greatly modified versions of a standard side-trawler design. Perform seismic and geophysical studies in the Black Sea and Mediterranean under the Ministry of Geology and Geophysics Institute, respectively.

♦ 1 small research ship (In serv. 1962)

PROFESSOR KOLESNIKOV

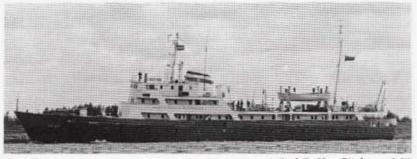


Professor Kolesnikov

French Navy, 1984

♦ 1 ex-passenger ship (In serv. 1961)

Ayu-Dag



Ayu-Dag

L. & L. Van Ginderen, 6-83

D: Approx. 1,000 tons (ff) **S:** 13 kts **Dim:** $63.8 \times 9.3 \times 3.0$ **M:** Diesels; 2 props; . . . hp

Remarks: 1,002 grt. Subordinated to the Academy of Sciences of the Estonian S.S.R. Very little scientific equipment carried.

◆ 1 ex-Norwegian seismic research ship Bldr: A.M. Liasen SY, Alesund SHELF II (ex-Longva) (In serv. 1962)

D: Approx. 1,400 tons (fl) S: 13 kts Dim: 63.0 (57.9 pp) × 10.0 × 4.2 Electron Equipt: Radar: 3/navigational

M: 1 Klockner-Humboldt-Deutz diesel; 1 prop; 1,500 hp

Electric: 360 kw Fuel: 249 tons Range: . . . Man: 52 tot.

Remarks: 793 grt. Purchased 1977 for oil exploration. Very elaborately equipped, including data storage computers. Has passive tank stabilization, bow-thruster.

• 1 Gromovoy-class former tug

Bldr: Galati SY, Romania

Vladimir Obruchev (In serv. 1959)

D: 900 tons (fl) S: 11 kts Dim: 45.7 (41.5 pp) × 9.45 × 3.9 Electron Equipt: Radar: 2/Don-2

M: 2 diesels; 1 prop; 1,200 hp Man: 33 crew + 11 scientists

Remarks: Employed in seismic research by the Ministry of Geology. Former commercial tug.

 2 converted Fryazino class 1956) Bldr: Crichton-Vulcan, Turku, Finland (In serv.

1990)

PETR LEBEDEV SERGEY VAVILOV



Petr Lebedev

R. Neth. Navy, 1985

D: 4,800 tons (fl) S: 13.5 kts Dim: 94.2 (86.7 pp) × 14.0 × 5.7

Electron Equipt: Radar: 1/Okean, 1/Don-2 M: 1 Sulzer 6TD.56 diesel; 1 prop; 2,400 hp

Range: 6,000/13.5 Man: 90 tot

Remarks: 3,642 grt/1,675 dwt. Converted for research from cargo ships in 1961; further modified 1966. Perform acoustic research for the Hydroacoustic Institute, Academy of Sciences, in support of naval projects. Invariably work together. Home-ported in the Baltic. Aft stack is a dummy, offset to port.

11 Mayakovskiy class Bldr: Black Sea (Nosenko) SY, Nikolayev

| | In serv. | | In serv. |
|--------------------|----------|--------------------|----------|
| A.I. VOYEYKOV | 1959 | Odissey | 1970 |
| AKADEMIK BERG | 1963 | Persey-III | 1968 |
| AKADEMIK KNIPOVICH | 1964 | Poseidon | 1971 |
| Argus | 1969 | Professor Deryugin | 1967 |
| EKVATOR | 1968 | Skif | 1969 |
| IKHTIANDER | 1973 | | |

D: Approx. 3,600 tons (fl) S: 13 kts Dim: 84.7 (78.1 pp) × 14.0 × 5.7 Electron Equipt: Radar: 2/Don-2

M: 2 Russkiy Dizel diesels; 1 CP prop; 2,000 hp

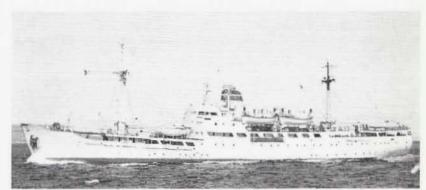
Electric: 800 kw Range: 18,000/12 Man: 53 crew + 37 scientists

Remarks: Average 3,220 grt/1,287 dwt. Stern-haul fish-factory trawlers adapted for research purposes. Voyeykov, with stern ramp plated up, operates for the Hydrometeorological Institute and has an End Tray radiosonde tracking radar. The remainder support fisheries research for the Ministry of Fisheries. Odissey and Ikhtiander have a large internal hangar opening through the port side of the hull to launch a Sever-II or Tinro-2 research submersible. Deryugin, Persey-III, Argus, and Poseidon carry a Sever-I submersible, launched via crane. Skif and Ekvator are essentially unmodified from the fishing-boat version. The six Primorye-class intelligence collection ships were built on the same hull.

• 1 Mikhail Lomonosov class

Bldr: Neptunwerft, Rostock, East Germany

Mikhail Lomonosov (In serv. 1957)



Mikhail Lomonosov

2-8

D: 5,960 tons (fl) S: 13.6 kts Dim: 102.4 (95.5 pp) × 14.4 × 6.0 Electron Equipt: Radar: 2/Don-2

M: 1 set reciprocating steam with turbine booster; 1 prop; 2,450 hp

Electric: 746 kw Fuel: 780 tons Boilers: 2 Range: 11,000/13.6 Man: 80 crew + 55 scientists

Remarks: 3,898 grt/2,254 dwt. Altered while under construction as a *Kolomna*-class cargo ship. Operated by the Academy of Sciences, Ukrainian Institute of Oceanology. Has 16 laboratories.

♦ 1 Korall class Bldr: Laivateollisuus SY, Turku, Finland

ZARYA (In serv. 9-52)

D: Approx. 600 tons (fl) S: 8 kts Dim: 52.5 (42.5 pp) × 9.0 × 3.1

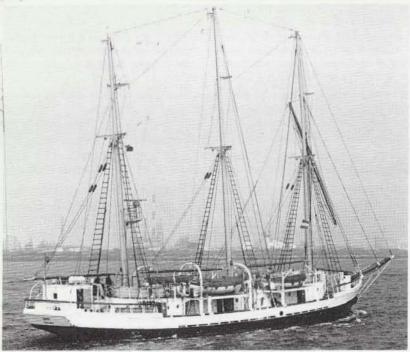
Electron Equipt: Radar: 1/Spin Trough M: 1 Halberstadt 6NVD36 diesel; 1 prop; 300 hp Range: 4,000/8 Man: 35 crew + 10 scientists

Remarks: 333 grt/78 dwt. One of the last survivors of a large class of wooden-hulled sealer schooners built as war reparations. Several remain in naval service as deperming tenders. Zarya has been made as completely non-magnetic as is possible and is used in gravimetric and ocean-current research by the Academy of Sciences. Homeported at Murmansk. Refitted 1984-85. See photo on the next page.

CIVILIAN ICEBREAKERS

Note: Because of their importance to the Soviet Navy in keeping Arctic sea-lanes open, the Ministry of the Merchant Marine's icebreakers are listed here. There is little doubt that they would come under naval jurisdiction in wartime, and, in fact, the nuclear-powered icebreaker Leonid Brezhnev (ex-Arktika) was heavily armed during initial sea trials. Naval-subordinated icebreakers are listed in the Soviet Navy section.

CIVILIAN ICEBREAKERS (continued)



Zarya

L. & L. Van Ginderen, 7-83

NUCLEAR-POWERED ICEBREAKERS

♦ 0 (+2) Taymyr class Bldr: Wärtsilä, Helsinki/. . . SY, Leningrad

Taymyr (In serv. 1990) N. . . (In serv. 1991)



Taymyr—artist's rendering

Wärtsilä, 1984

D: 20,480 tons (23,460 fl) S: 20.5 kts

Dim: 150.00 (136.00 pp) × 30.00 (28.00 wl) × 11.00

Electron Equipt: Radar: 4/. . . nav.

M: 2 pressurized-water reactors, steam turbines, electric drive; 2 props; 74,800 hp Electric: 11,400 kw (5/2,000 kw turboalternators, 1/1,000-kw diesel set, 2/200-kw diesel sets)

Man: 142 crew + helicopter crew and medical personnel

Remarks: Ordered 1984 for shallow water work in Arctic estuaries. Reactors to be installed at Leningrad after delivery in 1988 and 1989 from Finland. Will be able to break 2-m thick ice continuously.

◆ 3 (+1) Arktika class Bldr: Baltic SY, Leningrad

| | Laid down | L | In serv |
|------------------------------|-----------|-------|---------|
| LEONID BREZHNEV (ex-Arktika) | 1971 | 12-72 | 12-74 |
| Sibir' | 1973 | 2-76 | 1977 |
| Rossiya | | 11-83 | 11-85 |
| N | 11-83 | | |

D: 19,300 tons light (23,460 fl) S: 21 kts (15 kts service)

Dim: 148.0 (136.0 pp) × 30.0 × 11.0

Electron Equipt: Radar: 1/Okean, 1/Don-2, 1/Head Net C

M: 2 pressurized-water reactors, turbogenerators, electric drive; 3 props; 75,000 hp Electric: 11,400 kw Man: 173 tot.

REMARKS: 18,172 grt/4,096 dwt. Arktika, renamed 1982, was armed during her trials period with 8/76.2-mm DP (II × 4, controlled by 2/Hawk Screech radar GFCS) and 8/30-mm AA (II × 4, controlled by 2/Drum Tilt radar GFCS) and had an air-search radar; these were removed before the ship left the Baltic. Propulsion power is distrib-



Sibir'

Ships of the World, 1984

uted 37,500 hp on the centerline shaft and 18,750 hp on each of the outboard shafts. Each shaft is driven by two 8,800-kw a.c./8,100-kw d.c. motors. Rossiya and the fourth unit have heated waterline ice-strokes and improved, corrosion-resistant hull steel alloys. Rossiya began dock trials 8-85. There is a hangar and flight deck for two Helix (Ka-32) ice-reconnaissance helicopters. Leonid Brezhnev (as Arktika) traveled to the North Pole in 8-77, the first surface ship to do so.

◆ 1 Lenin class Bldr: Admiralty SY, Leningrad

LENIN (In serv. 20-12-59)



Lenin

Sovfoto

D: 15,940 tons light (19,240 fl) S: 19.7 kts (18 kts service)

Dim: 134.0 (124.0 pp) × 26.8 × 10.5

M: 2/4-loop pressurized-water reactors, 4/8,200-kw turbogenerators, electric drive; 3/4-bladed props; 39,800 hp

Electric: . . . Man: 218 tot.

Remarks: 14,067 grt/3,849 dwt. The world's first nuclear-powered surface ship. Lenin was out of service for many years in the late 1960s and re-emerged with a new reactor plant having only two reactors vice the original three. Helicopter deck and hangar.

SEAGOING ICEBREAKERS

• 4 Kapitan Sorokin class Bldr:

Bldr: Wärtsilä, Helsinki

KAPITAN SOROKIN (In serv. 1977)
KAPITAN DRANITSYN (In serv. 1980)
KAPITAN NIKOLAYEV (In serv. 1978)
KAPITAN KHLEBNIKOV (In serv. 1981)

D: 10,440 tons light (14,655 fl) S: 19 kts (16 kts service)

Dim: 131.9 (122.5 pp) × 26.5 × 8.5

M: 6 Wärtsilä-Sulzer 9ZL 40/48 diesel generator sets, electric drive; 3 props; 22,300 hp

Electric: 4,900 kw Fuel: 3,666 tons

Range: 10,700/16 Man: 11 officers, 65 crew

Remarks: 10,609 grt/4,225 dwt. Equipped with the Wärtsilä bubbler system to keep the hull bottom ice-free. Helicopter pad, no hangar. All personnel accommodated in the superstructure. Considered to be "shallow-draft" ships. Equipped to perform salvage and towing operations.

SEAGOING ICEBREAKERS (continued)



Kapitan Nikolayev

Wärtsilä, 1983

* 3 Yermak class

Bldr: Wärtsilä, Helsinki

YERMAK (In serv. 4-7-74) Admiral Makarov (In serv. 6-75) KRASIN (In serv. 2-76)



Admiral Makarov

Wärtsilä, 1975

D: 13,280 tons light (20,241 fl) S: 19.5 kts

Dim: $135.8 (130.0 \text{ pp}) \times 26.0 \times 11.0$

M: 9 Wärtsilä-Sulzer 12 ZN 40/48-3,050 diesel generator sets, electric drive;

3/4-bladed props; 36,500 hp

Electric: See remarks Fuel: 5,750 tons

Range: 29,300/14 Man: 146 tot.

Remarks: 12/231 grt/7,441 dwt. The U.S.S.R.'s most powerful conventional icebreakers. Can break 6-m ice or maintain 2 kts through 1.8-m ice. Have Wärtsilä bubbler system, helicopter pad. Electrical power taken from propulsion generators. Krasin refitted 1-84 to 3-84 by Böttcher and Gröning, Hamburg; re-engined.

5 Moskva class

Bldr: Wärtsilä, Helsinki

Moskva (In serv. 1960) LENINGRAD (In serv. 1962) Kiev (In serv. 1966)

Murmansk (In serv. 1968) VLADIVOSTOK (In serv. 1969)



Kiev

Wärtsilä

D: 13,290 tons (15,360 fl) **S:** 18.3 kts **Dim:** 122.1 (112.4 pp) \times 24.5 \times 10.5 M: 8 Wärtsilä-Sulzer 9MH51, 2,160-kw diesel generator sets, electric drive;

3/4-bladed props; 26,300 hp

Fuel: 5,200 tons Range: 20,000/14 Man: 116 tot.

Remarks: 9,427 grt/4,221 dwt. Have heeling tanks, capable of shifting 480 tons of water in two minutes. Can carry two ice-reconnaissance helicopters. 60-ton bollard pull towing capacity. Leningrad was overhauled at Yokohama in 1969-70 and re-engined.

MEDIUM ICEBREAKERS

3 Mudyug class

Bldr: Wärtsilä, Helsinki

Mudyug(In serv. 10-82) Dikson (In serv. 17-3-83) Magadan (In serv. 12-82)



Mudyug

L. & L. Van Ginderen, 7-83

D: 6,138 tons (fl) S: 17.45 kts (trials) Dim: 92.0 (88.6 hull, 78.5 pp) \times 21.4 \times 6.5

M: 4 Wärtsilä Vasa 8R32 heavy-oil diesel; 2 CP props; 12,000 hp (9,500 in ice) Electric: 2,530 kw Range: 15,000/16.5 Man: 43 tot.

Remarks: Approx. 4,400 grt. Have Wärtsilä air-bubbler system. Intended for use in the Barents, Baltic, and Sea of Okhotsk. Have 917KN bollard pull. Unusual in not employing electric drive.

♦ 14 Dobrynya Nikitich class

Bldr: Admiralty SY, Leningrad

| | In serv. | | In serv. |
|-----------------------|----------|-------------------|----------|
| VASILIY PRONCHISHCHEV | 1961 | SEMEN CHELYUSHKIN | 1965 |
| Afanasiy Nikitin | 1962 | YURIY LISYANSKIY | 1965 |
| KHARITON LAPTEV | 1962 | PETR PAKHTUSOV | 1966 |
| Vasiliy Poyarkov | 1963 | Georgiy Sedov | 1967 |
| YEROFEY KHABAROV | 1963 | Fedor Litke | 1970 |
| IVAN KRUZHENSHTERN | 1964 | Ivan Moskvitin | 1971 |
| VLADIMIR RUSANOV | 1964 | SEMEN DEZHNEV | 1971 |



Yuriy Lisyanskiy

L. & L. Van Ginderen, 7-84

D: 2,675-2,940 tons (fl) S: 14.5 kts (12.0 service)

Dim: 67.7 (62.0 pp) × 18.3 × 6.1 Electron Equipt: Radar: 1 or 2/Don-2 M: 3 Type 13D100 diesel generator sets; 3/3-bladed props (1 fwd); 5,400 hp Fuel: 600 tons Range: 5,500/12 Man: 39 tot.

Remarks: 2,305 grt/1,092 dwt typical. Seven sisters, several of which are armed, serve the Soviet Navy. Petr Pakhtusov and Georgiy Sedov have been employed on occasional scientific voyages by the Academy of Sciences. The specially built research icebreakers Otto Schmidt (civilian) and Vladimir Kaurayskiy (naval) are variants of this design, as are the Ivan Susanin-class patrol icebreakers. Ships of this class are often used as ocean tugs in summer months.

3 Kapitan Belousov class

Bldr: Wärtsilä, Helsinki

Kapitan Belousov (In serv. 1954) Kapitan Voronin (In serv. 1955)

KAPITAN MELEKHOV (In serv. 1956)

MEDIUM ICEBREAKERS (continued)



Kapitan Belousov

D: 5,360 tons (fl) S: 16.5 kts Dim: 83.20 (77.10 pp) \times 19.40 \times 7.0 M: 6 Wärtsilä diesel generator sets, electric drive; 4 props (2 fwd); 10,600 hp Fuel: 1,025 tons Range: 10,000/14.8 Man: 120 tot.

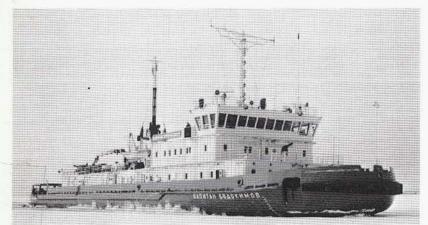
Remarks: 3,377 to 3,710 grt/1,308 to 1,423 dwt. The U.S.S.R.'s first post–W.W. II icebreakers; primarily for harbor and thin-ice work, hence forward-mounted pair of propellers. Can break 1-2-m ice.

RIVER ICEBREAKERS

• 8 (+1) Kapitan Yevdokimov class

Kapitan Yevdokimov (In serv. 31-3-83) Kapitan Babichev (In serv. 30-6-83) Kapitan Borodkin (In serv. 13-11-83) Kapitan Chudinov (In serv. 9-9-83) Kapitan Evdokimov (In serv. 1983) Bldr: Wärtsilä, Helsinki

Avraamiy Zavenyagin (In serv. 12-4-84) Kapitan Metsayk (In serv. 8-84) Kapitan Demidov (In serv. 22-11-84) N. . . .



Kapitan Evdokimov

Wärtsilä, 1984

D: 2,200 tons (fl) S: 13.5 kts (12 kts service) Dim: 76.5 (. . . pp) × 16.6 × 2.5
 M: 4 Wärtsilä Vasa 12V22B, 1,640-hp diesel generator sets, electric drive; 4 props (2 fwd); 5,170 hp
 Man: 25 tot.

Remarks: 1,500 grt. Remarkably shallow draft. Intended to clear Arctic rivers. Equipped with Wärtsilä bubbler system and a sewage treatment plant. Ninth ordered 27-6-84.

| ♦ 6 Kapitan Chechkin class Bldr: W | Värtsilä, Helsinki |
|------------------------------------|--------------------|
|------------------------------------|--------------------|

| | In serv. | | In serv. |
|------------------|----------|-----------------|----------|
| KAPITAN BUKAYEV | 1978 | KAPITAN KRUTOV | 1978 |
| KAPITAN CHADAYEV | 1978 | KAPITAN PLAKHIN | 1977 |
| KAPITAN CHECHKIN | 1977 | KAPITAN ZARUBIN | 1978 |
| | | | |

D: 2,240 tons (fl) **S:** 14 kts **Dim:** 77.6 (73.9 pp) \times 16.3 \times 3.3 **M:** 3 Wärtsilä diesels, electric drive; 3 props; 6,300 hp

Electric: 330 kw Range: . . . Man: 28 tot.

Remarks: Approx. 1,600 grt. Capable of breaking 1-meter-thick ice; have air-bubbler system. Service speed 10 kts.



Kapitan Krutov

Wärtsilä, 1978

• 3 Kapitan M. Izmaylov class

Bldr: Wärtsilä, Helsinki (In serv. 1976)

KAPITAN A. RADZHABOV KAPITAN KOSOLABOV KAPITAN M. IZMAYLOV



Kapitan A. Radzhabov

Wärtsilä, 1976

D: 2,048 tons (fl) S: 14 kts Dim: 56.3 (52.2 pp) × 16.3 × 4.2 M: 4 Wärtsilä Vasa 824TS diesels, 2/4-bladed props; 5,330 hp Fuel: 380 tons Range: 5,000/14 Man: 24 tot.

REMARKS: 1,362 grt/354 dwt. Endurance: 15 days.

UNITED ARAB EMIRATES

Personnel (1985): 80 officers, 1,120 men

Merchant Marine (1984): 225 ships - 766,493 grt (25 tankers - 524,413 grt)

Naval Aviation: Two Britten-Norman BN-2 Islander Maritime Defender ordered 1982 for patrol duties. Abu Dhabi ordered 8 AS-332 Super Puma helicopters with AS 39 Exocet anti-ship missiles in 1983.

Note: Primarily incorporating the former Defense Force Sea Wing of the Abu Dhabi National Defense Force, the UAE Navy was formed on 1 February 1978 as part of the federated forces of Abu Dhabi, Ajman, Dubai, Fujairah, Ras al Khaimah, Sharjah, and Umm al Qaiwan. The merchant marines of these states are also combined into a single administrative unit.

GUIDED-MISSILE PATROL BOATS

| ♦ 6 TNC-45-class guided-missile boats | Bldr: Lürssen, Vegesack |
|---------------------------------------|-------------------------|
| In serv. | In serv. |

P 4501 Baniyas 11-80 P 4504 Shaheen 4-81 P 4502 Marban 11-80 P 4505 Saqar 6-81 P 4503 Rodqum 4-81 P 4506 Tarif 6-81

UNITED ARAB EMIRATES (continued) GUIDED-MISSILE PATROL BOATS (continued)



Rodgum (P 4503)

L & L Van Ginderen, 1983

D: 231 tons (259 fl) S: 41.5 kts Dim: 44.9 (42.3 pp) × 7.0 × 2.46 (prop) A: 4/MM 40 Exocet (II × 2) - 1/76-mm OTO Melara DP - 2/40-mm Breda AA $(II \times 1) - 2/76.2$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/Decca TM 1226, 1/PEAB 9LV 200 Mk 2 system EW: Decca Cutlass RDL-2 passive, 1 Dagaie chaff RL

M: 4 MTU 16V538 TB92 diesels; 4 props; 15,600 hp (13,000 sust.)

Electric: 405 kVA Range: 500/38.5; 1,600/16

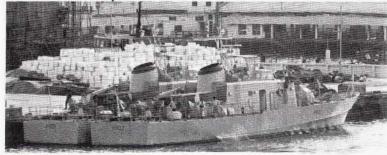
Man: 5 officers, 27 men

Remarks: The radar director is equipped with low light-level t.v. and an infrared tracker and has an associated search radar atop the mast. There is a CSEE Panda optical director for the 40-mm mount. Carry 350 rds. 76-mm, 1,800 rds. 40-mm, and 6,000 rds. mg ammunition.

PATROL BOATS AND CRAFT

♦ 6 110-foot class Bldr: Vosper Thornycroft, Portsmouth, U.K.

| | L | | L |
|----------------|---------|-------------------|----------|
| P 1101 ARDHANA | 7-3-75 | P 1104 AL GHULIAN | 16-9-75 |
| P 1102 Zurara | 13-6-75 | P 1105 RADOOM | 15-12-75 |
| P 1103 Murban | 15-9-75 | P 1106 GHANADHAH | 1-3-76 |



Ardhana and Zurara

1976

D: 110 tons (140 fl) **S:** 29 kts **Dim:** 33.5 (31.5 pp) \times 6.4 \times 1.7 A: 2/30-mm BMARC/Oerlikon A32 AA (II × 1) - 1/20-mm AA Electron Equipt: Radar: 1/Decca TM 1226 M: 2 Ruston-Paxman Valenta RP200M diesels; 2 props; 5,400 hp Range: 1,800/14 Man: 26 tot.

• 3 Kawkab-class patrol craft

Bldr: Keith Nelson, U.K.

P 561 KAWKAB (In serv. 7-3-69) P 563 Baniyas (In serv. 27-12-69) P 562 Thoaban (In serv. 7-3-69)



Kawkab

Vosper, 1960

D: 25 tons (32 fl) **S:** 17.52 (15.84 pp) \times 4.72 \times 1.37 A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca RM 916 M: 2 Caterpillar diesels; 2 props; 750 hp Endurance: 7 days Electric: 24 kw Man: 2 officers, 9 men

Remarks: Fiberglass hull. Used for coastal patrol, hydrographic surveys, and surveillance of petroleum leases. Designed by Keith Nelson, a division of Vosper. Freshwater evaporator provides 900 liters daily.

SERVICE CRAFT

 1 repair tender Bldr: Singapore Slipway

BARRACUDA (In serv. 6-83)

. S: . . . Dim: 58.0 × . . . × . . .

M: 2 Ruston-Paxman RKCM diesels; 2 props; 6,000 hp

♦ 2 workboats Bldr: Cheverton, Cowes, U.K. (In serv. 1975)

A 272 A 271

> **D:** 3.3 tons **S:** 8 kts **Dim:** $8.2 \times 2.7 \times 0.8$ M: 1 Lister-Blackstone RMW3 diesel; 150 hp

Remarks: Glass-reinforced plastic construction.

COAST GUARD

REMARKS: The Coast Guard operates under the Ministry of the Interior.

PATROL CRAFT

• 9 45-ft MK-II class Bldr: Watercraft, Ltd., U.K. (In serv. 1982-83)

D: 10 tons (fl) S: 26 kts Dim: 13.90 × 4.26 × 1.14 A: 1/7.62-mm mg Electron Equipt: Radar: .

M: 2 M.A.N. D2542 MLE diesels; 2 props; 1,300 hp Man: 5 tot.

Remarks: Glass-reinforced plastic construction. Ordered 2-82.

• 17 P 1200 class Bldr: Watercraft, Ltd., U.K. (In serv. 1979-81)

D: 10 tons (fl) **S:** 29 kts **Dim:** 11.90 (10.16 wl) \times 4.08 \times 1.06 **A:** 2/7.62-mm mg (I \times 2) **M:** 2 MTU diesels; 2 props; 800 hp Range: 300/20 Man: 4 tot.

REMARKS: Glass-reinforced plastic hulls. First ten delivered 1979-80; seven more ordered, 1980.

• 6 Dhafeer-class patrol craft Bldr: Keith Nelson, Bembridge, U.K.

| L | In serv. | | L | In serv. |
|------|----------|----------------------------|---|---|
| 2-68 | 1-7-68 | P 404 Durgham | 9-68 | 7-6-69 |
| 5-68 | 1-7-68 | P 405 Timsah | 9-68 | 7-6-69 |
| 5-68 | 1-7-68 | P 406 Murayjib | 2-70 | 7-7-70 |
| | 5-68 | 2-68 1-7-68 5-68 1-7-68 | 2-68 1-7-68 P 404 DURGHAM 5-68 1-7-68 P 405 TIMSAH | 2-68 1-7-68 P 404 Durgham 9-68 5-68 1-7-68 P 405 Timsah 9-68 |

D: 10 tons **S:** 19 kts **Dim:** $12.5 \times 3.65 \times 1.1$

A: 2/7.62-mm mg (I × 2) M: 2 Cummins diesels; 2 props; 370 hp

Range: 15/18; 350/15 Man: 1 officer, 5 men

Remarks: Subordinate to Marine Police. Fiberglass hull.

• 6 Spear-class police patrol craft Bldr: Fairey Marine, Hamble, U.K.

D: 10 tons S: 26 kts Dim: 9.1 × 2.75 × 0.84

A: 2/12.7-mm mg M: 2 Perkins T 6-354 diesels; 2 props; 580 hp Man: 3 tot.

Remarks: In service in 8-74, 9-74, and 1-75. Fiberglass hull.

◆ 5 P-77A customs patrol craft Bldr: Camcraft, New Orleans, La. (In serv. 9-75)

No. 21 through No. 25

D: 70 tons (fl) **S:** 25 kts **Dim:** $23.4 \times 5.5 \times 1.5$ **A:** 2/20-mm AA (I \times 2) M: 2 G.M. 12V 71T diesels; 2 props; 1,400 hp Range: 750/25

◆ 2 50-foot customs patrol craft Bldr: Cheverton, Cowes, U.K. (In serv. 2-75)

AL SHAHEEN AL AQAB

D: 20 tons S: 23 kts Dim: 15.2 × 4.3 × 1.4

A: 1/7.62-mm mg M: 2 G.M. diesels; 2 props; 850 hp Range: 1,000/20 Man: 8 tot.

U.S.A

Personnel (9-85): Navy: 571,300 active (70,973 officers, 495,802 enlisted, 4,525 midshipmen), plus 106,194 selected reserve, 14,257 TAR active-duty reservists; Marines: 198,025 active (20,145 officers, 177,850 enlisted), plus 41,919 selected reserve (3,381 officers, 38,538 enlisted) and 56,062 inactive reserve (3,647 officers, 48,415 enlisted); civilians: 356,500 total.

Merchant Marine (1984): 6,441 ships — 19,291,868 grt (tankers: 323 ships — 8,205,818 grt)

NAVAL PROGRAM

The table lists new construction programs for fiscal years 1984 through 1990. The annual five-year program has fluctuated drastically for many years and, because of changing political pressures, cannot be relied on as an accurate projection of what will actually be proposed, let alone authorized and appropriated by the Congress. It is nonetheless given here as the best available forecast; it will probably be reduced.

SHIPBUILDING PROGRAM 1984-1991

| | A | uthorize | ed | | | Proposed | i | |
|---|------|----------|------|------|------|----------|------|-----------------------|
| New construction: | FY84 | FY85 | FY86 | FY87 | FY88 | FY89 | FY90 | FY9 |
| SSBN, Ohio | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| SSN, Los Angeles | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 1 |
| SSN-21 | - | _ | _ | _ | - | 1 | - | 2 |
| CG, Ticonderoga | 3 | 3 | 3 | 2 3 | 2 3 | 2 | 2 3 | - |
| DDG, Arleigh Burke | - | 1 | _ | 3 | 3 | 3 | 3 | 5 |
| LSD, Whidbey Isl. | 1 | 2 | 2 | - | _ | _ | _ | - |
| LSD, LSD-41 var. | - | _ | - | - | 1 | 1 | 1 | 1 |
| LHD, Wasp | 1 | _ | 1 | _ | 1 | 1 | 1000 | 1 |
| MCM, Avenger | 3 | 4 | 2* | 3 | 3 | _ | - | _ |
| MSH, Cardinal | 1 | _ | 4 | 4 | 4 | 4 | - | _ |
| T-AO, H.S. Kaiser | 2 | 3 | 2 | 2 | 2 | 2 2 | 2 | 2 |
| T-AGOS | - | 2 | 2 | 3† | 3 | 2 | 2 | 2 |
| AE, AE-36 | - | - | _ | - | 1 | - | 2 | 2 2 2 1 3 |
| AOE, AOE-6 | | - | _ | 1 | _ | 1 | 1 | 1 |
| AGOR | | - | - | 1 | - | _ | 2 | |
| ARS | - | | - | _ | _ | - | | 1 |
| Total | 15 | 20 | 21 | 24 | 24 | 21 | 20 | 22 |
| Major Conversions/ SLEP/reactivations: | | | | | | | | |
| CV SLEP | _ | 1 | _ | | 1 | _ | - | 1 3 |
| LPD SLEP | _ | 1944 | - | - | - | 1 | 3 | 3 |
| BB, Iowa | 1 | _ | 1 | - | - | - | - | _ |
| AO-177 stretch | - | 100 | _ | 1 | 1 | 1 | 2 | - |
| T-ACS conv. | 1 | 2 | 3 | 2 | 2 | 2 | - | - |
| | 2 | 3 | 4 | 3 | 4 | 4 | 5 | 4 |

* Navy requested 4, Congress authorized 3, then funded 2.

† One each in FY 87, 88 to be new design, both in FY 89, 90, 91.

MARINE CORPS

Created in 1775, the Marine Corps has three missions:

- to seize and/or defend advanced bases as needed for the operations of the fleet

- to furnish security detachments on board ships and at land bases

—to carry out any other operations that the president of the United States may assign.

The third mission permits the corps to be used in operations that are not purely naval (e.g., Belleau Wood in 1918 and Vietnam in the 1960s and 1970s).

Its total strength of about 198,025 men and women forms three Marine Amphibious Force (MAF) divisions (one stationed in Okinawa/Japan, two in the United States), each of 32,600 men, and three air wings, organized under two Fleet Marine Forces (FMF). These last also maintain heavy support elements for the divisions. A fourth division-wing team constitutes a reserve cadre. Each MAF has 70 tanks, 280 aircraft, 340 helicopters, and 100 artillery batteries attached.

The Marine Corps has approximately 400 fighter and attack aircraft (A-4M, A-6, AV-8A/C, F-4), 600 assault and utility helicopters, more than 500 tanks, and some 450 amphibious landing vehicles.

The major operational unit is the Marine Amphibious Force (MAF), which consists of one division, one air wing, and Fleet Marine Forces augmentation, for a total of about 58,000 Marines, plus about 26,300 naval personnel aboard ships, etc.

Amphibious ships currently in service do not permit the rapid overseas deployment of MAFs, but only of two Marine Amphibious Brigades (MAB). A MAB consists of one Regimental Landing Team, a strong unit with two or more battalion landing teams of about 822 men each; one mixed air group of 110 fighter, attack fixed-wing aircraft and 120 helicopters, 15 tanks and 30 artillery batteries, and some augmentation from the Fleet Marine Force, for a total of about 15,500 men. The smallest assault unit is the Marine Amphibious Unit (MAU), with a landing team, air squadrons, and support personnel, totaling 2,500, and has 5 tanks, 6 aircraft, 30 helicopters, and 5 artillery batteries.

SPECIAL FORCES

Consisting of 1,700 men in 1985, the 6 SEAL Teams were divided into 41 platoons. By 1990 the force is to grow to 2,700 men in 7 teams/70 platoons, all capable of aerial or seaborne insertion.

THE NAVAL RESERVE FORCE

Naval Reserve Force ships have cadre crews of regular naval personnel, with reserve augmentation personnel constituting up to two-thirds of the total crew assigned. As of 30-9-85, the Force included: 1 destroyer, 11 frigates, 18 ocean minesweepers, 2 tank

landing ships, 2 salvage ships, 4 Special Boat Units, 16 Mobile Inshore Undersea Warfare Units, 17 Mobile Construction Battalions, and 6 Cargo-Handling Battalions. Naval Reserve Force Air Wings will consist of 51 aircraft squadrons: 4 fighter, 6 attack, 2 light photographic, 2 carrier air early warning, 2 tactical electronic warfare, 2 aerial refueling, 13 patrol squadrons (organized into 2 patrol wings), 1 helicopter wing (4 ASW squadrons, 1 combat support squadron, and 2 light attack squadrons), 1 tactical support wing (with 11 logistical support squadrons), and 2 fleet composite squadrons. Also incorporated in the Naval Reserve program will be 2,100 other units supporting 35 programs to augment Regular Navy staffs in wartime.

THE MILITARY SEALIFT COMMAND

The Military Sealift Command (MSC) operates or charters ships in support of the United States Navy. Headed by an active-duty U.S. Navy flag officer, its ships are manned primarily by civilians, either civil service or contract employees. The ships of the MSC are listed in a separate section, after naval units.

| | TIVE SERVIC | | CONSTRUCTION, OR |
|------------------------------------|--------------|-------------|--|
| THERO | MINIED IN | Std. | 1000 |
| | L | Tons | Main armament |
| ♦ 14 (+3) attack carriers | | | |
| 0 (+3) Theodore Roosevelt (CVN) | 1984-89 | 82,000 | 88-90 aircraft, 3/Sea Sparrow |
| 3 Nimitz (CVN) | 1972-80 | 81,600 | 88-90 aircraft, 3/Sea Sparrow |
| 1 Enterprise (CVN) | 1960 | 75,700 | 88-90 aircraft, 2/Sea Sparrow |
| 1 JOHN F. KENNEDY (CV) | 1967 | 61,000 | 88-90 aircraft, 3/Sea Sparrow |
| 3 KITTY HAWK (CV) | 1960-64 | 60,100 | 88 aircraft, 2-3/Sea Sparrow |
| 4 Forrestal (CV) | 1954-58 | 59,600 | 88 aircraft, 2/Sea Sparrow |
| 2 Midway (CV) | 1945-46 | 51,000 | 65 aircraft, 0 or 2/Sea Sparrow |
| ♦ 12 (+2) amphibious assau | ılt helicopt | er carrie | rs |
| 0 (+2) Wasp (LHD) | 1987 | 28,000 | 2/Sea Sparrow, up to 42 a/c |
| 5 Tarawa (LHA) | 1972-78 | 28,000 | 3/127-mm DP, 2/Sea Sparrow, 19 or 30 helicopters |
| 7 Iwo Jima (LPH) | 1960-69 | 17,000 | 4/76.2-mm, 2/Sea Sparrow, 28 helicopters |
| • 36 (+6) nuclear-powered | ballistic-n | nissile sub | marines |
| | | (surfaced) | |
| 6 (+6) Ohio (SSBN) | 1979- | 15,750 | 24/Trident, 4/TT |
| 30 Lafayette (SSBN) | 1962-66 | 7,250 | 16/Poseidon or Trident, 4/TT |
| ♦ 96 (+19) nuclear-powere | d attack su | bmarines | |
| 33 (+19) Los Angeles | 1973- | 6,000 | 4/TT |
| 1 GLENARD P. LIPSCOMB | 1973 | 5,813 | 4/TT |
| 37 Sturgeon | 1966-74 | 3,640 | 4/TT |
| 1 Narwhal | 1967 | 4,550 | 4/TT |
| 13 Permit | 1961-66 | 3,526 | 4/TT |
| 1 Tullibee | 1960 | 2,317 | 4/TT |
| 2 Ethan Allen | 1960-62 | 6,300 | 4/TT |
| 5 Skipjack | 1958-60 | 3,075 | 6/TT |
| 2 Skate | 1957-58 | 2,570 | 8/TT |
| 1 Seawolf | 1955 | 3,765 | 6/TT |
| • 4 diesel/electric-powered | attack sub | marines | |
| 3 Barbel | 1958-59 | 2,146 | 6/TT |

1956

1942-44

1974-78

1971-72

1964

1961

1959

1 Darter

2 (+2) Iowa

2 (+2) battleships

♦ 30 (+16) cruisers

9 nuclear-powered

4 VIRGINIA (CGN)

2 California (CGN)

1 TRUXTUN (CGN)

1 Bainbridge (CGN)

1 Long Beach (CGN)

8/TT

32 Tomahawk, 16 Harpoon,

AA, 3 helicopters

2/missile launchers,

2/missile launchers,

1/missile launcher,

2/missile launchers

4/ASW TT

6/ASW TT 2/missile launchers,

ASROC, 4/ASW TT

8/Harpoon, ASROC,

ASROC, 6/ASW TT

9/406-mm, 12/127-mm DP,

4/20-mm Vulcan/Phalanx

8/Tomahawk, 8/Harpoon,

2/127-mm DP, 6/ASW TT

8/Harpoon, 2/127-mm DP,

8/Harpoon, 1/127-mm DP,

8/Tomahawk 8/Harpoon,

1.720

46,100

Tons

10,400

10,400

8,600

8,600

15,500

WARSHIPS IN ACTIVE SERVICE (continued)

| 18 (+16) conventional: | | | |
|-----------------------------|---------|-------|--|
| 3 (+16) Ticonderoga | 1981- | 7,400 | 2/missile launchers, 8/Harpoon, 2/127-mm DP, 6/ASW TT, 1/helicopter |
| 9 Belknap (CG) | 1963-65 | 6,570 | 1/missile launcher, 8/Harpoon, 1/127-mm DP, 6/ASW TT, 1/helicopter |
| 9 Leahy (CG) | 1961-63 | 6,070 | 2/missile launchers, 8/Harpoon, ASROC, 6/ASW TT |
| ♦ 69 (+1) destroyers | | | |
| 0 (+1) Arleigh Burke | 1988- | 6,500 | 2/VLS missile groups, 8/Harpoon, 1/127-mm DP, 6/ASW TT |
| 4 Kidd | 1979-80 | 8,140 | 2/missile launchers, 2/127-mm DP, 6/ASW TT, 1/helicopter |
| 31 Spruance | 1973-81 | 5,830 | 1/Sea Sparrow, 8/Harpoon, 2/127-mm DP, ASROC, 6/ASW TT, 1/helicopter |
| 23 Charles F. Adams | 1959-63 | 3,370 | 1/missile launcher, Harpoon, 2/127-mm DP, ASROC, 6/ASW TT |
| 10 Coontz | 1958-60 | 4,700 | 1/missile launcher, 8/Harpoon, 1/127-mm DP, ASROC, 6/ASW TT |
| 1 Forrest Sherman | 1955-58 | 2,780 | 3/127-mm DP, 6/ASW TT |
| ♦ 111 (+5) frigates | | | |
| 46 (+5) OLIVER HAZARD PERRY | 1976- | 2,997 | 1/missile launcher, Harpoon, 1/76-mm, 6/ASW TT, 1/helicopter |
| 46 Knox | 1966-73 | 3,011 | 0 or 1/Sea Sparrow, Harpoon, 1/127-mm DP, ASROC, 4/ASW TT, 1/helicopter |
| 6 Вкооке | 1963-66 | 2,643 | 1/missile launcher, 1/127- mm DP, ASROC, 6/ASW TT, 1/helicopter |
| 10 Garcia | 1963-65 | 2,624 | 2/127-mm DP, ASROC, 6/ASW TT, 1/helicopter |
| 1 Glover | 1965 | 2,650 | 1/127-mm DP, ASROC, 6/ASW TT |
| 2 Bronstein | 1962 | 2,360 | 2/76.2-mm DP, ASROC, 6/ASW TT |
| | | | |

♦ 6 guided-missile patrol hydrofoils

- ♦ 21 (+14) mine countermeasures ships
- ♦ 51 (+7) amphibious warfare ships (plus helicopter carriers above)

WEAPONS AND SYSTEMS

A. MISSILES

fleet ballistic missiles

Poseidon C-3 (UGM 73A) - Lockheed

| Length: | 10.4 m | Propulsion: | solid propellant, two stages | | | |
|-----------|--|-------------|-------------------------------|--|--|--|
| Diameter: | 1.8 m | Guidance: | inertial | | | |
| Weight: | 29.48 tons at launch | Range: | 2,500 or 3,200 nautical miles | | | |
| Warhead: | arhead: 14 warheads with independent and controllable trajectory, each of (MIRV) to 2,500 nautical miles or 10 of 50 kt to 3,200 nautical miles warheads have been "uploaded" to increase destructive force. | | | | | |

Trident-1 C-4 (UGM-96A) - Lockheed

Operational in 1978. Designed for the *Ohio*-class SSBNs, which carry 24, and for 12 *Lafayette* and *Benjamin Franklin* SSBNs, which carry 16. A total of 630 is programmed, 150 for operational testing. The first eight *Ohio*-class SSBNs will slowly convert to the later D-5, from 1-91 to 1999. Seventy-two procured FY 83, 52 approved FY 84, the final year of production requests.

| Length: | 10.4 | Guidance: | Inertial |
|--|------------------------------------|--------------|----------------------------|
| Weight: | 31.75 tons at launch | Range: | 4,350 nautical miles |
| Propulsion: solid propellant, three stages | | Warhead: | 8 MIRV of 100 kt, Mk 4 |
| The Mi | 500 Evader MARV (Maneuverable | Re-entry Veh | icle) with six 100-kt war- |
| | developed by Lockheed, with procu- | | |

Trident-2 D-5 - Lockheed

In development for deployment in the late 1980s in the Pacific Fleet, and 1992 in the Atlantic. First ship to carry will be SSBN 734. First 27 to be requested under FY 87.

Length: 13.9 m Weight: 57.15 at launch Propulsion: solid propellant, three stages

Range: 6,000 nautical miles with 122-m circular point of error (CEP)
Warhead: 14 MIRV of 150 kt each or 7 MARV (Maneuverable Re-entry Vehicles) of 300 kt each. Initially will use same Mk 12A re-entry vehicles as the land-

based Minuteman III and Peacemaker (MX), with 475-kt W87 warheads.

surface-to-surface missiles

Tomahawk (BGM-109) - General Dynamics

Two versions are projected, strategic and tactical. The anti-ship tactical version was to become fully operational in 3-84, and the conventional land-attack version is to enter service in 9-85. Planned procurement is for 3,994 total missiles, with 2,600 potential launchers: submarines (using torpedo tubes or special vertical launch tubes), surface ships (using 4-missile armored box launchers or vertical launch cells), and aircraft. Fifty-one procured FY 83, 124 approved FY 84, 180 in FY 85, 249 in FY 86.

Length: 6.17 m Diameter: 0.52 m

Weight: 1,542 kg at launch (1,816 kg encapsulated for submarine launch)

Propulsion: solid booster, turbojet sustainer

Strategic version: 1,400 nautical miles range, operating at an altitude between 15 and 100 meters, at a speed of Mach 0.7. For launching from submarines, the weapon will be fired from torpedo tubes in a special container, jettisoned on leaving the water. Nuclear or conventional warhead. Guidance: TAINS (Tercom-Aided Inertial Navigation System) using preprogrammed data plus TERCOM (Terrain Contour Matching). By 30-9-86, there will be 14 surface ships and 30 attack submarines equipped for Tomahawk.

Tactical version: 250 nautical miles range, thus requiring an external means of target designation. Warhead weight up to 454 kg, conventional. Guidance: inertial, with active radar and anti-radiation homing.

| Tomahawk variant designations are: | Navy procurement goal: |
|--|------------------------|
| BGM-109A: land-attack, nuclear warhead | 758 |
| BGM-109B: anti-ship | 593 |
| BGM-109C: land-attack, conventional | 2,643* |
| BGM-109D: land-attack, bomblets | 0 |
| BGM-109E: anti-ship | 0 |
| BGM-109F: land-attack, anti-airfield | 560 |
| BGM-109G: ground-launched, nuclear (GLCM) | 0 |
| AGM-109C: MRASM proposal, terrain follower | 0 |
| AGM-109I: MRASM proposal, infrared seeker | 0 |
| AGM-109H: MRASM proposal, bomblets | 0 |

^{* 1486} Block IIA with Bullpup warheads, 1,157 Block IIB with bomblet payloads. There are also sub-variants for ship or submarine launch.

Harpoon (RGM-84A) - McDonnell Douglas

An all-weather cruise missile that can be launched by aircraft, surface ships, or submarines. A total of 281 surface ships and submarines are programmed to receive it. As of 9-82, there were 162 ships, 34 submarines, and 78 P-3 aircraft equipped to launch Harpoon. By 2-85, some 1,148 ship-launched variants had been delivered toward a force goal of 1,876. Under FY 82, 240 were procured, with 221 approved under FY 83, 315 in FY 84, 354 in FY 85, 395 in FY 86, and 153 planned for FY 87.

Length: 4,628 m ship-launched/3.848 m air-launched

Diameter: 0.343 m — Wingspan: 0.914 m

Weight: 681 kg from canister, 680 kg from SAM launcher or 653 kg from ASROC

launcher (with booster)

Propulsion: CAE-JA02 turbojet, with a rocket booster added to the ship- and subma-

rine-launched versions

Speed: Mach 0.85

Guidance: inertial, then active homing on J band in the final trajectory

Range: 70 nautical miles (85 n.m. in Block I missiles with improved JP-10 fuel)

Warhead: 227 kg

AGM-84 is the 526-kg, air-dropped version, which does not require a solid rocket booster, and UGM-84 is the submarine version. The submarine version is shrouded and is launched from the torpedo tubes while submerged. In order to reach the maximum range, it is necessary to use targeting systems external to the launching unit—helicopters, for example. The AGM-84 will be carried by A-6E, P-3B and P-3C and Air Force B-52 (12 each) aircraft. The U.S. Air Force acquired 85 undelivered Iranian AGM-84 in 8-84.

 surface-to-air missiles (Note: Standard and Sea Sparrow can also be used against surface ships)

Standard SM-1 MR (RIM-66B) - General Dynamics

Single-stage missile, replaced Tartar.

Length: 4.47 m Guidance: semi-active homing
Diameter: 0.34 m Range: 25 nautical miles, 150-60,000 ft

Weight: 625 kg

System comprises Mk 11 twin launcher or Mk 13 single launcher with a vertical ready-service magazine containing 40 missiles (on the FFG 1 class: Mk 22 with 16 missiles), a computer, an air-search radar, a three-dimensional SPS-39, SPS-48, or SPS-52 radar, and SPG-51 guidance radars. A series of missiles of approximately the same size as the first RIM 24 Mod. 0 (U.S. military designation) but with constantly improved propulsion, miniaturization of components, and improved missile flight profile. Acceptance trials with the Block 6 variant (digital computer, monopulse radar) were carried out 3-83. 650 approved under FY 83.

MISSILES (continued)

Standard SM-2 MR (RIM-66C) - General Dynamics

Single-stage missile for use with Aegis-equipped ships. Initial procurement of 30 in FY 80. 150 approved under FY 83, 846 in FY 86.

Length: 4.70 m Diameter: 0.34 m

Weight: 706 kg (Block II missiles)

Guidance: semi-active homing, with mid-course guidance capability, inertial reference,

Range: and improved ECCM more than 25 nautical miles

Standard SM-1 ER (RIM-67) - General Dynamics

Two-stage missile that replaced the Terrier family. "Block II" series (1,095 ordered under FY 82, 375 under FY 83) to get increased intercept altitude, greater warhead lethality, and improved jam resistance.

Length: 7.98 m

Diameter: 0.34 m (booster diameter: 0.46 m)

Weight: 1,306 kg

Guidance: semi-active homing Range: 30-40 nautical miles

Standard SM-2 ER (RIM-67B) - General Dynamics

Two-stage missile to replace Talos. Will be employed in ships with Mk 10 or Mk 26 launch systems, and later in vertical launchers. A nuclear warhead option is under development. Initial procurement of 55 in FY 80. 470 authorized under FY 86.

Length: 7.98 m

Diameter: 0.34 m (booster diameter: 0.46 m)

Weight: 1,442 kg

Guidance: semi-active homing, with mid-course guidance capability, inertial reference,

and improved ECCM

Range: 75-90 nautical miles

Note: A number of the superannuated RIM-2 Terrier missiles with nuclear warheads will be retained in inventory until the nuclear warhead SM-2 Standard is available. Under FY 84, funds were appropriated for 1,190 Standard missiles of all types, with

1,380 under FY 85 and 1,316 in FY 86.

Sea Sparrow (RIM-7) - Raytheon

Known at first as BPDMS (Basic Point Defense Missile System). The 50 initial installations employed RIM-7E-5 fixed-fin missiles launched from the eight-celled Mk 25 launcher and controlled by the Mk 115 radar-equipped fire-control system. These are being replaced by the Mk 15 Vulcan/Phalanx 20-mm gatling gun system, beginning in 1982. A lightweight launcher, Mk 29, employing eight RIM-7F folding-fin missiles and the Mk 91 radar fire-control system, is now in use. In Europe this later system, IPDMS (Independent Point Defense Missile System), is also known as NATO Sea Sparrow and was first tested in the *Downes* (FF 1070). The RIM-7M version now being procured uses a blast-fragmentation warhead vice the earlier RIM-7H's expanding rod variety and has a monopulse radar; 1,593 were ordered in FY 82-83. 314 RIM-7M authorized under FY 85.

Length: 3.657 m Weight: 204 kg

Diameter: 0.20 m Range: 8 nautical miles

Aegis (ex-Advanced Surface Missile-System — ASMS)

Development began 1964. A fire-control system based on the AN/SPY-1 "billboard" fixed-array radar to provide 360° coverage. Employs SM-2 MR missiles to simultaneously attack a number of targets under the most adverse electronic countermeasures conditions, including targets at extremely low altitude. Three clusters of four AN/UYK-7 computer systems direct all functions automatically: the detection and tracking of the closing targets, data distribution for target evaluation and designation through pre-programmed information retained in the system, integration of radar and other information sources in the ship, and the selection of missiles and distribution of fire.

The Mk 26 twin launcher, which can also handle the ASROC ASW surface-to-surface missiles, is used. The various types of missiles are stowed vertically in ready-service magazines below the launcher. The Aegis system underwent trials in the *Norton Sound* beginning in 1974 and became operational in CG 47 in 1983. The Martin-Marietta Mk 41 vertical-launch system is being developed to follow the Mk 26. Trials commenced in late 1981 on *Norton Sound*, with first operational employment to be in CG 52; it will be able to accept Tomahawk and vertical-launch ASROC missiles as well.

RAM (Rolling Airframe Missile) (XRIM-116A) — General Dynamics

A point-defense system intended to replace or supplement Sea Sparrow. Will use a 127-mm missile that employs slow spinning for stability (hence the name). Guidance is by dual-mode anti-radiation and/or infrared proportional navigation homing, and either a Mk 31 21-missile launcher, or modified Mk 29 Sea Sparrow-type launchers may be used as the launcher. The 21-missile launcher uses the Phalanx mounting, while the version for use in the Mk 29 launcher would put 5 missiles into each of two cells of the 8-celled launcher. A lightweight, 8–10 round launcher is under development for Denmark. The missile homes on active radiation from the target until it picks up an infrared target signature and employs the current Stinger seeker in conjunction with Sidewinder fuzes, warheads, and rocket motors. The 21-missile launch installation weighs 4,977 kg above deck, 800 kg below. Target designation will be by the Mk 23 TAS system in U.S. Navy ships. Being developed under a 7-76 agreement by the U.S., Denmark, and West Germany, with introduction into U.S. Navy service planned for late 1980s. First 30 built under FY 85.

Under FY 86, 117 initial production missiles were authorized for the U.S. Navy, with another 130–150 to be built for West Germany, which will produce the missiles itself by the RAM System GmbH consortium (Messerschmidt, AEG-Telefunken, RTG).

Length: 2.794 m Diameter: 127 mm Weight: 70.9 kg Speed: Mach 2+

Note: The Marine Corps employs the shoulder-launched infrared-homing General Dynamics FIM-92A Stinger SAM with troops and the deployable MIM-23B I-Hawk (Improved Hawk) SAM battery for airfield and strong point defense. Under FY 84, 1,205 Stinger and 360 I-Hawk missiles were authorized for procurement, with 2,360 Stinger authorized in FY 85 and 3,439 requested under FY 86. Stinger is also deployed aboard a number of Navy ships:

Length: 1.52 m Warhead: 3 kg (proximity fuze)

Diameter: .07 m Speed: Mach 2.0

Weight: 15.1 kg

• antisubmarine warfare missiles

ASROC (RUR-5A) - Honeywell

A solid-fuel rocket used with a parachute-retarded Mk 46 torpedo. Range is regulated by the combustion time of the rocket motor. Rocket-torpedo separation is timed. The Mk 112 launcher carries eight rockets that can be trained together and elevated in pairs. Fire control is made up of a computer linked with an SQS-23, SQS-26, or SQS-53 sonar.

Length: 4.42 m Range: 9,200 m

Diameter: 0.324 m Warhead: Mk 46 Mod. 1 torpedo or Mk Weight: 454 kg 17 nuclear depth bomb

On Knox-class frigates the ASROC launcher was modified to permit the launching of Standard SSM missiles (later, Harpoon) in place of two ASW weapons. On older installations, loading is slow because the rockets have to be manually transferred from the magazines. However, on later Brooke- and Garcia-class and all Knox-class frigates, a hoist transfers the rocket from a magazine below the bridge for semiautomatic loading, while in the Spruance class the missiles are reloaded vertically. Some 12,000 ASROC rounds were procured between 1960 and 1970, when production ceased.

ASROC is launched from the Mk 10 missile launchers in the CG 26 and CGN 35 classes and from the Mk 26 launchers in the CGN 38 and CG 47 classes. A vertical-launch ASROC is under development for use with Mk 41 launchers in CG 52 and later *Ticonderoga*-class cruisers and in DDG 51-class destroyers. With booster attached, the weapon will be 5.08 m long, 0.358 m in diameter, and will weigh about 750 kg.

SUBROC (UUM-44A-2)

Introduced in 1962 as a submarine torpedo tube-launched ASW weapon with a nuclear depth-bomb payload, SUBROC was to be phased out because of the age of its solid-fueled rocket motors and because its analog fire-control system was incompatible with the Mk 117 Mod. 3 digital fire-control systems installed or backfitted in U.S. Navy submarines. However, in 1983, Congress authorized funds to alter the fire-control systems.

Weight: 1,816 kg Propulsion: two-stage solid-fuel rocket

Length: 6.40 m Range: 30 nautical miles

Diameter: .533 m Guidance: inertial

SOW (Sea Lance)

A replacement for SUBROC, designated the ASW SOW (Stand-Off Weapon), was canceled in 1981 in favor of an abortive program to produce a *single* weapon to replace both SUBROC and ASROC. That having predictably proven impracticable, the programs were again separated in 1982. The new SOW will be launched from SSN 688-class submarines operating at down to 80 percent of their test depths. Plans call for acquisition of 2,400 weapons, with either nuclear or conventional warheads, and with operational deliveries commencing about 1991.

Length: 6.25 m Range: 1056 nautical miles Diameter: .533 m Guidance: inertial in flight

Weight: 1,406 kg

• air-to-surface missiles

Note: In the early stages of development is a 7 to 15 n.m. "fire-and-forget" ground attack weapon to enter service circa 2000: AIWS—Advanced Interdiction Weapon System.

PENGUIN Mk 2 Mod. 7 (AGM-. . .) - Kongsberg/Grumman

Initially tested for the U.S. Navy in 1982-83 as a surfaced-launched weapon, Penguin is being developed for firing by SH-60B LAMPS-III helicopters. Range is being extended, the wings are being made foldable, and the infrared homing seeker is being improved. Only 272 are planned for procurement, to be carried aboard 35 FFG 7 frigates and 20 DD 963 destroyers. If procurement goes forth, about 130 helicopters will be modified to carry the missile.

Weight: 1,202 kg Warhead: Bullpup Mk 19

Range: 15+ n.m.

Other data approximately as for the Norwegian Navy version.

Skipper (AGM-123A) - Aerojet General

Skipper is essentially a Mk 83, 1,000-lb bomb, equipped with a Paveway II infrared seeker and guidance head and a Shrike (AGM-45) solid rocket motor. Developed by the

MISSILES (continued)

Naval Weapons Station, China Lake, Cal., it offers a very low unit price (\$20,000/ weapon) and reasonable accuracy. Some 2,500 were to be acquired during FY 84.

Maverick (AGM-65E and AGM-65F) - Hughes

Developed from the Air Force AGM-65D, the AGM-65E is a laser-designated, airlaunched missile for the Marine Corps, while the AGM-65F version for the Navy will use infrared homing. Both have the same 136-kg penetrator, blast-fragment warhead. For use by A-7 and A/F-18 aircraft and, later, the A-6E. Rapid escalation of price initially forced scaling back of procurement; 90 were procured under FY 83 and 165 were bought under FY 84. In FY 85 600 were authorized, while under FY 86, 1,500 AGM-65E and 195 AGM-65F were authorized.

Weight: E: 208.8 kg/F: 307 kg

Length: 2.49 m Diameter: 0.305 m

0.72 m Span: Propulsion: solid-fuel rocket

Standard-ARM (AGM-78) — General Dynamics

Air-launched version of Standard that homes on electromagnetic radiation. More versatile than Shrike. No longer in production.

Range:

Length: 4.57 m Range: 35 nautical miles

Warhead: 97.6 kg Weight: 624.2 kg

Shrike (AGM-45) — Texas Instruments

An anti-radar missile. No longer in production.

Length: 3.048 m

Propulsion: solid-propellant rocket motor 12,000 to 16,000 m

Weight: 117 kg

Diameter: 0.2 m

Range: Speed:

Mach 2

Wingspan: 0.914 m

Walleye I and II (AGM-62) - Martin-Marietta/Hughes

Glide bomb guided by television. Uses Mk 82 or Paveway II bomb.

Length: I: 3.5 m; II: 4.0 m

Diameter: 0.325 m

Range:

I: 16 nautical miles; II: 35 nautical miles

Weight: I: 511 kg; II: 1,090 kg

Warhead: conventional-I: 373 kg; II: 908 kg Wingspan: 1.16 m

50 nautical miles

Harpoon (AGM-84)

See under surface-to-surface missiles.

HARM (AGM-88A) - Texas Instruments

HARM (High-Speed Anti-Radiation Missile) will be employed by A-7E, A-6E, FA-18, and U.S. Air Force F-4E Wild Weasel aircraft to suppress or destroy ground defenses. Will replace the obsolescent Shrike. Production of 5,000 was scheduled to start in 1982, with 160 authorized in FY 83, 381 in FY 84, 813 in FY 85 and 904 under FY 86.

Length: 4.17 m

Span:

Propulsion: solid-propellant, low-smoke rocket Guidance: homes on electromagnetic radiation

Diameter: 0.253 m 360 kg Weight:

Range: Speed:

Mach 2.0+

1.13 m TOW-2 (MGM-71) - Hughes

Wire-guided, helicopter- or ground-launched anti-tank weapon that uses optical sight and tube launcher. TOW = Tube-launched, Optically-guided, Wire-controlled. 2,200 approved under FY 84, 4,782 ITOW-2 under FY 86.

Length: 1.174 m

Span: 1.14 m

Weight: 18.9 kg Diameter: .152 m

Propulsion: solid-propellant rocket

Warhead: 3.6 kg hollow, shaped-charge Range: 2.3 nautical miles at Mach 1.0

ITOW (Improved TOW) weighs 19.1 kg, ITOW-2 weighs 21.5 kg.

Note: The Marine Corps uses TOW from AH-1T helicopters and from land, with each division now programmed to have 144 launchers. The Marines also employ the AGM-114A Hellfire anti-tank missiles and the lightweight M82 LAW, the latter being phased out. Some 219 Hellfire were authorized under FY 84, 438 under FY 85, and 1,500 in FY 86.

Length: 1.727 m or 1.778 m (imaging IR version)

Diameter: 0.1778 m (span: 0.3262 m)

45.7 to 47.88 kg

Hellfire has three variants: Laser-designated, RF/IR (Radio-Frequency Infrared), and IRIS (Imaging Infrared).

· air-to-air missiles

Sparrow III (AIM 7F,M) - Raytheon

The AIM-7F entered service in 1976 with a continuous-rod warhead. AIM-7M, the current version, entered service in 1983 with a blast/fragmentation warhead, active fuze, and improved seeker. In FY 85, 936 were authorized for procurement.

Length: 3.65 m

0.203 m Diameter: Weight: 227 kg

Guidance: semi-active homing Speed: Mach 2.5 Range:

Propulsion: solid-fuel rocket

26,000 m Warhead: 27 kg, proximity fuse

Sidewinder (AIM-9H, L, M) - Raytheon

Over 110,000 Sidewinder missiles have been built. The AIM-9L version uses an active optical fuze and has a guidance system permitting all-angle attacks. The AIM-9M version supplanted the -9L in production in 1981 and has improved capabilities against countermeasures and against targets seen against warm backgrounds. Only 500 AIM-9 L/M were authorized under FY 83, 350 under FY 84, none in FY 85, and 1,850 (for all services) under FY 86. "Sidearm" is a program to convert early-model AIM-9C missiles for anti-radiation homing; conversion of 885 was authorized under FY 86.

2.90 m Propulsion: solid-fueled rocket Length: Diameter: 0.127 m Guidance: infrared homing Wingspan: 0.61 m Speed: Mach 2.5 12 nautical miles Weight: 84.4 kg Range:

PHOENIX (AIM-54A, C) - Hughes

AIM-54A ceased production in 1980 after only 2,500 had been built for the U.S. and, unfortunately, Iran. The first 30 pilot-production AIM-54C were delivered 10-81, with 60 more to follow. Scheduled to enter service 1983-84. Only 90 procured under FY 83, rising to 265 under FY 84; in FY 85 only 265 were authorized, with 265 again in FY 86.

Length: 3.96

Weight:

Diameter: 0.380 m Wingspan: 0.914 m

Range:

Propulsion: solid-fueled rocket about 120 km

60.3 kg (continuous rod) Warhead:

AMRAAM (AIM-120A) - Hughes and Raytheon

AMRAAM (Advanced Medium-Range Air-to-Air Missile) is intended to replace the AIM-7F Sparrow. In development; first firings in 1985. The AIM-120B will have infrared homing added, and the AIM-120C will have improved aerodynamic performance. 90 developmental missiles requested under FY 86 for Navy and Air Force.

Length: 3.65 m

Warhead: 22.7 kg

Range: over 74 km Diameter: 0.178 m

Weight: 151.5 kg

Guidance: inertial mid-course, active terminal homing

B. GUNS

406-mm, Model 1936

Fitted in 1,700-ton triple turrets in Iowa-class battleships. Requires a crew of 77 men per mount, plus 30-36 men in the magazine. In 1981, 15,500 high-capacity, 3,200 armorpiercing, and 2,300 B, L, & P rounds were available, with 12,500 full-service and 12,600 reduced-charge sets remaining. Armor-piercing rounds can penetrate 9 m of reinforced concrete. Reworked powder has produced very high accuracy.

Length: 50 calibers

Muzzle velocity: armor-piercing: 739 m/sec.; high-cap: 902 m/sec.

Rate of fire: 2 rounds/minute/barrel

Maximum range: armor-piercing shell: 36,700 m; high-capacity shell: 38,000 m Weight of projectile: armor-piercing shell: 1,226 kg; high-capacity shell; 863 kg

Cartridge bags: 6 per charge, 50-kg or 24-kg reduced-charge Fire control: Mk 38 director with Mk 13 radar

203-mm Mk 16 Mod. 0

Automatic weapon fitted in 451-ton triple turrets on Des Moines-class cruisers.

Length: 55 calibers

Muzzle velocity: 900 m/second

Arc of elevation: -5° to $+41^{\circ}$ Rate of fire: 10 rounds/min/barrel

Maximum range: armor-piercing shell: 27,500 m; high-capacity shell: 28,670 m Weight of projectile: armor-piercing shell: 152 kg; high-capacity shell: 113 kg

Fire control: Mk 54 director with Mk 13 radar

127-mm, twin barrel, Mk 12 Mod. 1

Semiautomatic, dual-purpose gun fitted in the Mk 32 series mounts of the Iowa-class battleships and Des Moines-class cruisers. 720,000 rounds of 127-mm ammunition for these and the single "5-inch/38" mounts below remained available in 1981.

Length: 38 calibers

Muzzle velocity: 792 m/sec

Elevation: -15° to +85°

Rate of fire: 18 rounds/minute/barrel with a well-trained crew

Maximum range on a surface target: 16,500 m

Maximum effective range on a ship target: 12,000 to 13,000 m

Maximum range in antiaircraft fire: 11,400 m

Maximum effective range in antiaircraft fire: 8,000 m

Weight of projectile: 25 kg

Fire control: Mk 37 director with Mk 25 radar; Mk 56 director with Mk 35 radar in a few

127-mm, Mk 30

Single mounting, weighing 20.4 tons, enclosed Mk 30 series mountings on FFG 1, FF 1040, and CGN 9 classes. Other data as for twin mounting.

127-mm. Mk 42

Single-barrel, dual-purpose gun fitted on ships built in the 1950s and 1960s. Most mounts converted to Mk 42 Mod. 10 configuration. An SAL (Semi-Active Laser-guided projectile) is being developed for these and the Mk 45 gun. Trials at sea commenced in

GUNS (continued)

Briscoe (DD 977) in 1981. The round is 1.548 m long, weighs 47.49 kg, and is similar in concept to the U.S. Army's Copperhead weapon.

Length: 54 calibers

Muzzle velocity: 810 m/second

Mount weight: 65.8 tons, mod. 10: 63.9

Arc of elevation: -5° to +80°

tical

Rate of elevation: 80°/second

Rate of fire: 20 rounds/minute

Weight of projectile: 32 kg Range: 23,700 m horizontal/14,840 ver-

Rate of train: 50°/second Fire control: Mk 68 system with SPG-53 radar in most ships

Personnel: 13 men, with 2 in mount

Loading entirely automatic from two ammunition drums in the handling room up to the loading tray by means of a rotating hoist. Each drum contains twenty rounds. The rate of fire can be maintained for only one minute, inasmuch as it is necessary to reload the drums. Firing rate reduced from original 40 r.p.m. for safety.

127-mm Mk 45 - Northern Ordnance/FMC

Single-barrel mount fitted on Ticonderoga-, California-, and Virginia-class cruisers, Spruance-, Kidd-, and Arleigh Burke-class destroyers, and Tarawa-class amphibious assault ships. The Mod. 1 version permits rapid switching from one type of ammunition to another. A laser-guided projectile is in development.

Length: 54 calibers

Muzzle velocity: 810 m/second Mount weight: 21.7 tons Arc of elevation: -5° to $+65^{\circ}$ Rate of fire: 16 to 20 rounds/minute

Range: 23,700 m horizontal/14,840 vertical

Fire control: Mk 86 GFCS with SPQ-9 search radar: SPG-60 tracking radar Personnel: none on mount; 6 in handling room to reload ammunition drums

76.2-mm, Mk 22

Automatic dual-purpose gun in single (Mk 34) or twin (Mk 33) mounts, Mk 27 twin mounts in CA 134 and CA 139. Thoroughly obsolescent.

Length: 50 calibers

Mount weight: 15 tons. Mk 33 open mount

Weight of projectile: 3.2 kg

Rate of fire: 45 rounds/minute/barrel

Maximum range: 12,840 m horizontal/8,950 vertical

Fire control: Mk 56 system with Mk 35 radar or none in active ships

76.2-mm. Mk 21

Obsolescent. Single-fire, dual-purpose gun on two auxiliaries and some Coast Guard ships. Mk 26 mount.

Length: 50 calibers Mount weight: 4.2 tons Weight of projectile: 3.2 kg Rate of fire: 20 rounds/minute

Maximum range: 12,840 horizontal/8,950 vertical

Fire control: ring sight only

76-mm, Mk 75 - Northern Ordnance/FMC and OTO Melara

Single-barrel, license-built version of OTO Melara Compact, tested in the frigate Talbot and used in PHM and FFG 7 classes and Coast Guard Bear-class cutters; to backfit in Coast Guard ships. 1985 order to OTO Melara vice U.S. licensee, Northern Ordnance.

Length: 62 calibers Mount weight: 6.2 tons Weight of projectile: 6.4 kg Rate of fire: 85 rounds/minute

Maximum range: 19,200 m horizontal/11,900 m vertical

Fire control: Mk 92 radar system

Personnel: 4 below decks

40-mm, Mk 19 Mod. 3

Strictly speaking not a gun, but rather a lightweight rapid-fire grenade launcher in portable tripod-legged mountings. Found aboard auxiliaries and Coast Guard ships.

Range: 2,195 m; rate of fire: 300 r.p.m.

25-mm Mk 88 (M 242 Bushmaster) - Hughes Helicopter

A "chain gun," using linked Oerlikon M790 ammunition. For use on Mk III patrol boats, the new SWCM and later LSD 42-class landing ships.

Length: 2.74 m overall Weight: 109 kg (gun)

Rate of fire: single-shot, 100, or 200 r.p.m.

Fire control: ring sight

20-mm, Mk 16 Mod. 5

Single-barrel Mk 67 or Mk 68 mounting in small combatants, amphibious ships, and auxiliaries.

Length: 80 calibers Mount weight: . . .

Rate of fire: 800 rounds/minute

Maximum range: 3,000 m horizontal Fire control: ring sights on mount Weight of projectile: 0.34 kg

20-mm Mk 10

Single-barrel, license-built Oerlikon mounting in minesweepers and auxiliaries.

Length: 70 calibers

Mount weight: 318-500 kg Rate of fire: 450 rounds/minute

Maximum range: 4,390 m horizontal/3,050 m vertical

Fire control: ring sights on mount

20-mm, Mk 15 Mod. O Block 0 CIWS (Close-In Weapon System) - General Dynamics (G. E. gun)

Vulcan/Phalanx "Close-in" system designed to destroy missiles. It consists of a multibarrel, M61A1 20-mm gun with a very high rate of fire, which is co-mounted with two radars, one of which follows the target and the other the projectile stream. A computer furnishes necessary corrections for train and elevation so that the two radar targets coincide, bringing heavy fire to bear on the target. 672 units programmed to be fitted to U.S. ships. Only 989 rds. in Block O magazine. The first production unit completed 9-8-79 and was installed, with two others, in America (CV 66) on 17-4-80. An improved "Block I" version with more rounds on mount and a higher rate of fire will enter service in late 1986 - three years late. Uses Mk 149 rounds with depleted uranium sub-caliber penetrators, although tungsten rounds are furnished for export. Later versions may use a 4-barreled GAU-10, 30-mm gatling gun or a 5- or 7-barreled 25-mm gatling gun.

Mount weight: 5.4 tons

Rate of fire: 3,000 rounds/minute Maximum range: 1,486 m horizontal

C. TORPEDOES

submarine torpedoes

Mk 48 Mod. 1, Mod. 3, and Mod. 4

Entered service 1972. Can be launched from a submarine against a surface target or a submarine. No surface ships are currently equipped to launch Mk 48, although that capability was originally intended. A total of 3,059 Mk 48s were procured through 1980, plus 56 for Australia and 92 for the Netherlands; 144 additional for the U.S. Navy were appropriated under FY 80 and again in FY 81 through FY 84. FY 85 was the last year of production, with 108 authorized.

Length: 5.84 m

Speed: 55 kts

Diameter: 0.533 m

Propulsion: 500 hp Otto-cycle swashplate engine

Weight: 633 kg

Depth: Up to 760 m

Can be launched with its own active-passive or acoustic homing system or with a wire-guidance system. High speed (40 knots) and long run duration (50,000 m). An improvement program, ADCAP (Added Capability) is being instituted, with the first twenty-two conversion kits requested under FY 80. The first "Near-Term Update" Mk 48 Mod. 4 torpedo was delivered 12-80. ADCAP will enter service in 1986, with the first 30 having been authorized under FY 85 and 123 authorized under FY 86.

surface-launched torpedoes

Mk 46 Mod. 1, 2, and 5-Honeywell

ASW torpedo using liquid fuel (Otto fuel), and twin, counter-rotating props. Entered service 1963. Active-passive guidance. Launched from Mk 32 ASW torpedo tubes or as payload for the ASROC ASW missile system.

Length: 2.60 m (4.50 with ASROC booster) Diameter: 0.324 m

Weight: 232.4 kg Warhead: 45.4 kg HE

The Mk 46 Mod. 1 and Mod. 2 are being upgraded to Mod. 6 NEARTIP (Near-Term Improvement Program) status with improved acoustic homing system and countermeasures resistance. Under FY 80, 576 conversion kits were requested, and 1,128 more were requested under FY 82; ultimately, some 2,700 torpedoes will be updated. The Mk 46 Mod. 4 is the payload for the Captor mine. 570 new Mk 46 Mod. 5 torpedoes were ordered from Honeywell in 1980, 440 under FY 83, and 1,200 under FY 84, 1,565 authorized FY 85, and 500 in FY 86. Production now planned to continue into the early 1990s.

Mk 50 ALWT - Honeywell

The ALWT (Advanced Lightweight Torpedo) is being developed as a replacement for the Mk 46 series and will be supplied in surface-launched and air-droppable configurations. It will be roughly the same weight as the Mk 46 and of the same dimensions, but will be deeper-diving (over 600 m), faster (over 40 knots), and have better homing and counter-countermeasures capabilities. Due to continuing program delays, will not be operational before the early 1990s. Weight: 362 kg; length: 2.93 m.

NT-37E-Honeywell

Remanufactured and greatly improved Mk 37 homing torpedoes available for export, but not used by U.S. Navy. Propelled by a 90-hp Otto-fuel motor.

Length: 3,467 m Diameter: 0.483 m Speed: 35 kts

18,000 m Range: Warhead: 148 kg HE

aircraft torpedoes

Mk 46 Mod. 0

Weight:

Similar to the surface-launched weapon, but equipped with a retarding parachute, solid vice liquid propellant, and does not have a straight run-out before commencing helical search. Will be replaced by the ALWT.

D. MINES

Mk 52 Mod. 1, 2, 3, 5, 6

Air-dropped. All 2.75-m long by 338-mm diameter (840 mm over fins). All carry 270 kg HBX explosive. Mod. 1 is an acoustic mine, weight: 542.5 kg. Mod. 2 is a magnetic influence version, weight: 568 kg. Mod. 3 is a dual-pressure/magnetic influence version, weight: 572.5 kg. Mod. 5 is an acoustic/magnetic influence version, weight: 570.7 kg. Mod. 6 is a pressure/acoustic/magnetic influence version, weight: 546 kg. All are bottom mines for depths of up to 47 m (Mod. 2: 183 m) and can be carried by U.S.A.F. B-52D and H bombers as well as Navy aircraft.

Mk 55 Mod. 2, 3, 5, 6, 7

Air-dropped bottom mines. All 2.89 kg long by .592 m diameter (1.03 m over fins) and carry 577 kg HBX-1 explosive. Versions: Mod. 2: magnetic influence, weight: 989 kg; Mod. 3: pressure/magnetic influence, weight: 994 kg; Mod. 5: acoustic/magnetic influence, weight: 994 kg; Mod. 6: pressure/acoustic/magnetic, weight 997 kg; Mod. 7: dual-channel magnetic influence, weight: 996 kg. All can be laid in 46-m-deep water, except Mod. 2, 7: 183 m. Can also be laid by surface ships, using portable rails.

Mk 56 Mod. 0

Aircraft-dropped moored mine. 996-kg. 3.51 m long by 592-mm diameter (1.06 over fins). Total-field magnetic influence exploder. Carries 577-kg HBX-3 explosive, Depth: 350 m.

Mk 57 Mod. 0

Submarine-laid moored mine. 1,012 kg, 3.07 long by 510-mm diameter. Carries 935 kg HBX-3 explosive. Depth: 250 m

Mk 60 Captor (enCAPsulated TORpedo)

Submarine-laid or aircraft-dropped. Uses Mk 46 Mod. 4 acoustic-homing torpedo payload. Primarily ASW in function. 908 kg, 3.66 m long by 324-mm diameter. 44.5-kg warhead. In development since 1961 but still not fully reliable. 260 requested under FY 80 in first major operational buy, with 500 approved under FY 83, 300 under FY 84, 300 under FY 85 and 150 (unrequested) under FY 86. Mod 1 conversion kit gives improved target detection.

Mk 65 Quickstrike

Submarine-launched, 3.25 m long. 1,000 on order 1985.

Mk 67 SLMM (Submarine-Launched Mobile Mine)

Converted Mk 37 Mod. 0 torpedo. 754 kg, $4.09~\mathrm{m}$ long by 483-mm diameter. Bottom mine. Remains in development.

DST-36 Quickstrike series (Mods. 0-5)

Aircraft-dropped bottom mine. Converted from 500-lb (227 kg) Mk 82 standard aircraft bomb. Magnetic. 87-kg H-6 explosive charge. Over 4,000 procured.

DST-40 Quickstrike series (Mods. 0-5)

Aircraft-dropped bottom mine. Converted from 1,000-lb (454-kg) Mk 83 standard aircraft bomb. Magnetic.

DST-41 Quickstrike series (Mods. 0-5)

Aircraft-dropped bottom mine. Converted from 2,000-lb (908-kg) Mk 84 bomb. Magnetic or magnetic/seismic influence. 3.83 m long. Minelaying: no surface ships are capable of minelaying. Naval aircraft of the S-3, P-3, A-6, and A-7 types are capable of laying mines, as are some 80 operational Air Force B-52D bombers. Theoretically, any U.S. Navy submarine can lay mines from its torpedo tubes.

E. RADARS

Radars for active ships are:

* surface-search and navigation

- SPS-10: C-band, Mods. B through F in service. Primary surface-search set before the introduction of SPS-55. Being replaced by SPS-67.
- SPS-53: X-band. Navigational set for large ships and for MSOs, auxiliaries, and Coast Guard ships.
- SPS-55: X-band, slotted waveguide antenna. On Spruance-class destroyers and FFG 7 frigates, etc.
- SPS-59: Official designation for the LN-66 navigational radar.
- SPS-63: X-band, U.S. version of the Italian 3RM-20N for use on the *Pegasus*-class hydrofoils.
- SPS-64: X-band. Used by USCG in several versions and being introduced into the USN for auxiliaries and minesweepers, etc., in the SPS-64(V)9 version. Raytheon.
- SPS-67: C-band. A solid-state replacement for the SPS-10, using same antenna. Also has an ultra-short pulse mode for navigation. First use on refitted Long Beach (CGN 9) in 1982.
- Also in use are the small navigational radar sets LN-66, SPS-51, SPS-57, SPS-59, SPS-60, SPS-64, and SPS-66, all X-band and most using slotted-waveguide antennas.
- BPS-4, 11, 14, 15: X-band. Submarine search, navigational, and fire-control radars.

 Mounted on telescoping masts.

* two-dimensional air-search

- SPS-6: L-band. Obsolescent; used only on Thomaston (LSD 28) class.
- SPS-29: P-band. On some of the older DDGs and DDs. Same antenna as SPS-37 and SPS-43A.
- SPS-37: On some CVs, CGs, and DDGs. SPS-37A used long SPS-43A antenna. Pulse-compression version of SPS-29.
- SPS-40: B-band. The most widely used air-search radar. Range against medium bombers: 150-180 miles. Earlier "A" models being modernized to SPS-40D. P-band pulse-compression.
- SPS-43: SPS-43A with large antenna. Being replaced in aircraft carriers by SPS-49; SPS-43 with small antenna on missile cruisers, also being replaced by SPS-49.
- SPS-49: Aboard FFG 7-class and others. S-band.
- SPS-58/65: L(D)-band, pulse-doppler. Combined air surface-search radar, now uses modified SPS-10 antenna; used for low-altitude defense. Some 51 sets procured. Used in carriers; being replaced by Mk 23 TAS.

three-dimensional air-search

- SPS-39: S-band. Mod. A uses same antenna as SPS-52. In some DDGs: E-band. SPS-52 is a version developed to interface directly with the NTDS data system.
- SPS-48A: Mounted on CG classes. Frequency-scanning system.
- SPS-48C, E: Electronic frequency scanning in elevation, improved SPS-48A. E version has doubled power, armored antenna, reduced side-lobe level, adaptive energy beam management, solid-state transmitter.
- SPS-52C: S-band improvements on SPS-39. Electronic frequency scanning in elevation.
- SPY-1A: S-band. Aegis system. Obtaining a directional effect by dipole radiation to secure an electronic sweep, it has four fixed aerials that provide instant 360° coverage. Long-range air-search, target-tracking, and missile-guidance. SPY-1B, with reduced side lobes to enter service 1988; SPY-1C developed for possible use on carriers; lighter-weight SPY-1D in development for DDG 51 program.

• fire-control

- Mk 13: 3-cm wavelength. Ranging set for Mk 38 director on *Iowa*-class battleships and on Mk 34 director on CA 134 and CA 139.
- Mk 25: X-band. Mounted on Mk 37 GFCS directors on CA, BB. Dish antenna.
- Mk 35: 3-cm wavelength. Mounted on Mk 56 GFCS director for 127-mm and 76.2-mm guns. On older FFGs and FFs. Removed from auxiliaries. Dish antenna.
- Mk 91: Technically, the fire-control system for the Sea Sparrow SAM system, used with the Mk 29 lightweight launcher. Either one (Mod. 0) or two (Mod. 1) radar directors per launcher. Uses Mk 57 Mod. 2 radar.
- Mk 92/94: U.S Navy adaptation of Dutch H.S.A. (Hollandse Signaal Apparaaten) WM-20 series track-while-scan gun/missile fire-control system. Used in FFG 7, PHM 1, and the Coast Guard's new WMEC classes. Antennas mounted in egg-shaped radome. Combined with STIR (modified SPG-60) antenna in FFG-7 class. Improvement program in FFG 7 to end Phase I in 1984. Phase II CORT will further update system.
- Mk 115: Technically the fire-control system for Sea Sparrow when launched from the Mk 25 heavy launcher. Older than Mk 91 and being phased out.
- SPQ-9: X-band, track-while-scan special surface-search and weapons-control for use with Mk 86 GFCS. Antenna mounted in spherical radome. Range: 36 km.
- SPG-51B, C, D: Standard MR illuminator-tracker; used with Mk 74 missile fire-control system.
- SPG-53: Mounted on Mk 68 GFCS director on CG, DDG, and DD with 127-mm Mk 42 guns.
- SPG-55A, B: Standard ER illuminator-tracker; used with Mk 76 missile fire-control system.
- SPG-60: Standard MR X-band, 4-horn monopulse, pulse-doppler illuminator-tracker with Mk 74 missile fire-control system in later CGN classes; also illuminates for guns in conjunction with Mk 86 GFCS. STIR version, used on FFG 7 class, is modified for use with Mk 92 Mod. 2 missile/gun control system. STIR = Separate Tracking & Illumination Radar. Can track Mach 3.0 targets to 183 km. Has a co-mounted tv. tracker.
- SPG-62: Standard SM-2 illuminator; used with Aegis system in CG 47 class. Slaved to SPY-1 radar.
- TAS/Mk 23: D-band. Technically a Target Acquisition System, employing a rapidly rotating, stabilized linear array antenna in conjunction with a UYK-20 computer to counter high- and low-angle aircraft and cruise-missile attacks. Range 20 n.m. on small missiles to 90 n.m. on aircraft. Mod. 0 on Downes (FF 1070) in 1975, Mod. 1 being added to Spruance (DD 963) class, Mod. 2 (with UYA-4 console) on Sacramento class, beginning with AOE 3 in 4-80. Can track 54 targets simultaneously.

RADARS (continued)

· carrier-controlled approach systems

- SPN-6: Formerly installed on aircraft carriers but now limited to AVT 16 and some LPH. Antenna in large radome.
- SPN-10: Aircraft landing aid, incorporating a radar set to determine aircraft position relative to the carrier. Antennas are two small conical dishes; SPN-10 remained on 5 ships in 1985 as the radar associated with the ACLS (Automatic Carrier Landing System) and CCA (Carrier-Controlled Approach) systems. Being replaced by SPN-42, which is less bulky. Other carrier aircraft landing aid/radar systems include SPN-41, SPN-43, and SPN-44. SPN-46 is to be added beginning in 1986 for use with Automatic Carrier Landing System.

F. COUNTERMEASURES SYSTEMS

· electronic systems, surface ships

- WLR-1: Radar warning array in older ships. Being updated to WLR-1H (7-18 gHz).
- WLR-3: Radar warning and signal collection also in some submarines.
- WLR-8: Radar warning system for the SSN 688 class, and (V)4 version in one carrier.
- ULQ-6: Deception repeater/jammer in cruisers, destroyers—being replaced by SLQ-32(V)3 in high-value ships.
- WLR-11: Radar warning system.
- SLQ-17: Jammer array for carriers; creates false target.
- SLQ-29: The combined WLR-8/SLQ-17 package.
- SLQ-32(V)1: Radar warning (H-, I-, J-bands) for auxiliaries and amphibious ships (to be on 113 ships).
- SLQ-32(V)2: Radar warning (B-J bands) for newer destroyers and frigates—replaces WLR-1 where fitted (to be on 107 ships).
- SLQ-32(V)3: Radar warning (B-J bands) and jamming/spoofing (H-J bands) for cruisers, DDG 37 class, and major amphibious ships (to be on 64 ships).
- SLQ-33: A Ship-Towed Acoustic Deception Device.
- SLQ-34 OUTBOARD: An intelligence collection system.

electronic systems, submarines

- BLQ-3, 4, 5, 8: Acoustic jamming system
- BLR-1-10, 13-15: Radar warning systems; BLR-14 also launches countermeasures.
- WLR-9: Sonar detection system.
- WLR-10: Radar warning receiver.

physical countermeasures systems

- T-Mk 6 Fanfare: Mechanical towed anti-torpedo noisemaker obsolescent.
- SLQ-25 Nixie: Towed torpedo countermeasure/noisemaker, to replace T-Mk 6-180 sets procured.
- Chaffroc: Two-celled (8-rocket) launcher for modified Zuni chaff-deploying rockets — obsolescent.
- Mk 33 RBOC: Rapid-Blooming Overboard Chaff launcher replaced by Mk 36.
- Mk 36 SRBOC: Super-RBOC Mod. 1 with two 6-tubed mortars for ships under 140 m; Mod. 2 with four 6-tubed mortars for ships over 140 m. All use Mk 182 chaff-dispensing cartridges, which climb to 244 m. "Torch" infrared decoy being developed for use with Mk 36 SRBOC, and the NATO Sea Gnat rocket chaff dispenser may be adopted.
- Mk 70 MOSS: Mobile Submarine Simulator small torpedo-like device for launch by Ohio-class SSBNs.

G. SONARS

on surface ships

- SQQ-14: High-frequency, minehunting, and classification set in retractable-transducer array on MSOs. A towed version, SQQ-35, is in development.
- SQQ-23: PAIR (Performance and Integration Refit). Modified SQS-23 using two transducer domes (except in CGN 9 and CG 16 classes: one dome); also in 4 DDG 2, 2 DDG 37 class.
- SQQ-28: LAMPS-III helicopter data-link processing system.
- SQQ-30: Minehunting sonar developed by General Electric for use on mine countermeasures ships; used only on MCM 1-8, MSH 1.
- SQQ-32: Raytheon/Thomson-CSF sonar to replace SQQ-30 in later units of the MCM 1 class and for the MSH 1 class. Separate detection and classification transducers lowered through well and towed well below the hull. Uses two UYK-44 computers.
- SQQ-89: Suite integrating the SQR-19 towed array, SQS-52B hull-mounted sonar,
 Mk 116 Underwater Fire Control System, SQQ-28 processor, and UYQ-28

- SIMAS (Sonar In-Mode Assessment System) for CG 56 and later, and for DDG 51. Trials in DD 980 late 1985.
- SQR-15: Developmental passive towed array, in FF 1037 and some FF 1040-class frigates.
- SQR-17: Passive shipboard classification device for processing data transmitted to CG 26, DD 963, F 1040, 1052, and FFG 7-class ships via LAMPS-I helicopters from various sonobuoys. Uses SKR-4 link receiver, AKT-22 link, ARR-75 sonobuoy receiver.
- SQR-18A: TACTAS (Tactical Towed Acoustic Sensor). For use on FF 1052 class equipped with SQS-35 VDS; array attaches to VDS towed body. Normal cable length is 1,706 m; towed at depths up to 366 m; array is 82.6-mm diameter. Latest version, SQR-18(v)1 with 730-m cable is aboard 35 FF 1052-class ships; uses 8 modular hydrophone sections. SQR-18A(v) uses SQR-19 towing rig for the non-VDS-equipped units of the FF 1052 class.
- SQR-19: Improved TACTAS for use on CG 47, DD 963, and FFG 7 classes; to be deployed through port in stern. Still in development.
- SQS-23: Bow- or hull-mounted low-frequency, active-passive. In CV 66, CGN 25, some CG, older DDG, and D 931 classes.
- SQS-26: Bow-mounted, low-frequency set, in various versions. In older CGN, CG 26, FFG 1, FF 1037, FF 1040, FF 1052, FF 1098 classes.
- SQS-35: Independent, variable-depth, towed, active-passive. In some DD 931 class, most FF 1052 class.
- SQS-38: Hull-mounted SQS-35 for USCG cutters.
- SQS-53: SQS-26 with digital computer interface, for use with Mk 116 UWFCS (Underwater Fire Control System) on DD 963, DDG 993, CG 47 classes. SQS-53B (General Electric/Hughes) has multiple target tracking and classification aids, weapons checkout routines, UYK-44 imbedded computers, UYQ-21 display, UYS-1 signal processor, a 60-percent reduction in required manning, 2,000-hour mean time between failures, and a 30-minute mean time to repair.
- SQS-56: Raytheon 1160B commercial active-passive, hull-mounted, medium-frequency set; used on FFG 7 class.
- SQS-58: Raytheon. In development. No data available.
- UQQ-2 SURTASS: SURveillance Towed-Array Sonar System, for use in the Stalwart (T-AGOS 1) class. Trails 1,830-m passive hydrophone array at about 3 knots.

• on submarines

- BQQ-4: PUFFS (Passive Underwater Fire Control). Three-fin arrays, on SSN 597, SS 574, SS 563 classes.
- BQQ-2: Active-passive system on SSN 594 class, SSN 597, SSN 637 class, SSN 671, SSN 685. Incorporates BPR-7 conformed hydrophone array and BQS-6 spherical hydrophone array. Being upgraded to BQQ-5 in most ships.
- BQQ-5: Active-passive system on the SSN 688 class; being backfitted in SSN 594 and SSN 637 classes. Incorporates BQS-11, 12, or 13 spherical bow hydrophone array. BQQ-5C has expanded DIFAR reception.
- BQQ-6: Passive-only version of the BQQ-5 system, for SSBN 626 class; has 944 hydrophone transducers mounted on a sphere.
- BQQ-9: Towed array signal processing system for BQR-15; Rockwell.
- BQR-15: Towed, passive array for SSN 608, SSN 616 classes. Incorporates BQR-23 signal processor.
- BQR-19: Active, short-range, navigational set for SSGNs. Raytheon.
- BQR-21: DIMUS (Digital Multi-Beam Steering). Passive array for SSBNs.
- BQR-23: STASS (Submarine Towed Array Sonar System). Used with BQR-25 in SSN 688, SSBN 726 classes. Current version: BQR-23A.
- BQR-24: Raytheon; processor, used with BQR-21.
- BQR-25: See BQR-23.
- BQS-4: Active/passive set in older SSN, SS.
- BQS-14, 20: Under-ice and mine-avoidance, high-frequency set, mostly on later SSNs. Part of the BQQ-2, -5, -6 systems.
- BQS-13: Raytheon. Active set.
- BQS-15: Under-ice set tailored to the requirements of the SSN 688 class.
- SUBACS: In development. "Basic" version is suite for later SSN 688-class SSNs. To use UYS-1 signal processor, USH-26 signal recorder, UYK-20A data processor. Passive arrays plus SADS (Submarine Active Detection Sonar) and towed passive array.

• on helicopters

- AQS-13: Dipping sonar used on SH-3 Sea King series.
- AQS-14: Mine countermeasures set used by MH/CH-53D helicopters.

H. PROCESSING OF TACTICAL DATA

The NTDS (Naval Tactical Data system) uses digital calculators (AN/UYK-20 and AN/UYK-7) to give an overall picture of a tactical situation—air, surface, and

PROCESSING OF TACTICAL DATA (continued)

underwater—and enables the commander to employ the means necessary to oppose the enemy. Excellent automatic data transmission systems (Link-11 and Link-14) permit the exchange of tactical information with similarly equipped ships and aircraft carrying the ATDS (P-3C Orion and S-3A Viking) and amphibious landing forces equipped with NTDS.

Nearly all ships are equipped to receive SATCOMM (Satellite Communications) messages, while most can send ultra-high-frequency messages via satellite, and 31 can send super-high-frequency messages. The Tactical Flag Command Center (TFCC) is being backfitted into 13 CV/CVN, 2 LCC, and 5 CG. It employs USQ-81(v) computergenerated displays in an integrated 6.2-m × 6.2-m display space.

NUCLEAR-POWERED AIRCRAFT CARRIERS

| ٠ | 0.0 + 3 |) improved | Nimitz class | Bldr: Newport | News | SB | 8 | DE |
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| • | 0110 | / Improved | TAILITIE CIGOS | Didi. Hewbori | TAOMO | NJ. | w | - |

| L In serv. |
|----------------|
| 10-84 27-10-86 |
| 9-87 12-89 |
| 9-89 12-91 |
| 1 |



Theodore Roosevelt (CVN 71)—note lack of any catapult bridle horns at bow or from angled deck W. Donko, 7-85

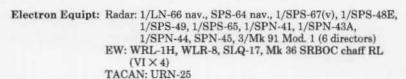


Theodore Roosevelt (CVN 71) - fitting out

L. & L. Van Ginderen, 7-85

D: 73,973 tons light (96,300-96,836 fl) S: 30+ kts Dim: 332.85 (317.0 pp) × 40.85 (flight deck: 78.33) × 11.71

A: 3/Mk 29 launchers (VIII × 3) for Sea Sparrow — 4/20-mm Mk 15 CIWS gatling AA — 86 aircraft, including 20 F-14, 18 F/A-18, 5 EA-6B, 20 A-6E, 5 E-2C, 10/S-3A, and 8/SH-3D



M: 2 A4W/A1G pressurized-water reactors (42.3 kg/cm²), 4 sets GT; 4 props; 280,000 hp

Electric: 64,000 kw + 8,000-kw emergency power from 4 diesel sets

Man: 6,286 tot. (203 officers, 3,205 men crew + 366 officers, 2,512 men air group).

REMARKS: CVN 71 authorized under FY 80; had been repeatedly delayed in favor of conventionally powered designs of inferior capabilities. Won out over both an administration-sponsored 62,427-ton (fl) paper CVV design and a compromise 82,561-ton repeat John F. Kennedy (CV 67) design.

The hangar will have 7.6 m clear height. The angled deck will be 237.7 m long and will be equipped with four arrester wires and a Mk 7 Mod. 3 barrier, as well as four C 13 Mod. 1 catapults (92.1 m long), and four elevators (21.3 \times 1.58 m, 47-ton capacity). An aviation payload of some 14,909 tons will be carried, and the aviation ordnance magazines will hold 1,954 tons. Aviation fuel capacity will be about 9,000 tons. Kevlar armor will be fitted over vital spaces, and hull-protection arrangements have been improved. Other data under the *Nimitz* class will generally apply. CVN 72 and 73 will have new, lower-pressure catapults and SPN-46 landing aids.

♦ 3 Nimitz class (SCB 102 Type) Bldr: Newport News SB & DD

| | Program | Laid down | L | In serv. |
|-----------------------------|---------|-----------|----------|----------|
| CVN 68 NIMITZ | FY 67 | 22-6-68 | 13-5-72 | 3-5-75 |
| CVN 69 DWIGHT D. EISENHOWER | FY 70 | 15-8-70 | 11-10-75 | 18-10-77 |
| CVN 70 CARL VINSON | FY 74 | 11-10-75 | 15-3-80 | 13-3-82 |

Authorized: CVN 68 in FY 67, CVN 69 in FY 71, CVN 70 in FY 74.



Carl Vinson (CVN 70)

L. & L. Van Ginderen, 12-84



Nimitz (CVN 68)

G. Gyssels, 2-85



Nimitz (CVN 68) - post 1983-84 refit

NUCLEAR-POWERED AIRCRAFT CARRIERS (continued)



Carl Vinson (CVN 70)

Pradignac & Leo, 1983



Carl Vinson (CVN 70)

G. Arra, 10-84



Dwight D. Eisenhower (CVN 69)

G. Gyssels, 2-85



Dwight D. Eisenhower (CVN 69) - still with SPS-43

G. Gyssels, 2-85

D: 70,916 tons light; 81,600 standard (91,700 fl) S: 30+ kts

Dim: 327.0 (over catapult bridle retrieval horns: 332.8, pp: 317.0) × 40.85 (flight deck: 77.11, max.: 89.4) × 11.3

A: 86 airplanes and helicopters: 20 F-14, 18 F/A-18, 5 EA-6B, 20 A-6E, 5 E-2C, 10 S-3, 8 SH-3D — 3/Mk 29 launchers (VIII × 3) for Sea Sparrow — 3 (CVN 70: 4)/20-mm Mk 15 CIWS

Electron Equipt: Radar: 1/LN-66, 1/SPS-10F, 1/SPS-49, 1/SPS-48B, 1/SPN-41, 2/SPN-42, 1/SPN-43A, 1/SPN-44, 3/Mk 115 (6 directors), 1/Mk 23 TAS

EW: WLR-1H, WLR-8, SLQ-17, Mk 36 SRBOC chaff (VI \times 4) TACAN: URN-25

M: 2 G.E. A4W/A1G pressurized-water reactors, 4 sets GT; 4 props; 280,000 hp Electric: 64,000 kw + 8,000 kw emergency power from 4 diesel sets Man: 6,286 tot. (569 officers, 3,091 crew, plus aviation personnel: (304 officers,

2,322 men)

Remarks: CV 68, 69 in Atlantic, CV 70 in Pacific, where CV 70 is to transfer. Carry 90% more aviation fuel and 50% more ammunition than the *Forrestal* class. ASCAC (Antisubmarine Classification and Analysis Center) permits instant sharing of target data between the carrier, its ASW aircraft, and escorting ships. *Nimitz* in refit 6-83 to 9-84; *Eisenhower* in refit 28-10-85 to 4-87.

Electronics: SPS-49 replaced SPS-43A in CVN 68 and CVN 70 in 1983, and in CVN 69 in 1986. Carry OE-82 satellite communications antennas and have full NTDS installations. The Mk 23 TAS is being added to improve defense against low-fliers and cruise missiles.

Armament: Carl Vinson completed with three Mk 29 launchers (VIII \times 3) for Sea Sparrow, six directors for the missile (3 Mk 91 Mod. 1 FCS), and four Mk 15 CIWS (Vulcan/Phalanx) gatling AA guns. The others have been similarly refitted, but will have only three Vulcan/Phalanx.

Armor: Decks and hull are of extra-strong, high-tensile steel to limit the impact of semi-armor-piercing bombs. Apart from the longitudinal bulkheads, there are twenty-three watertight transverse bulkheads (more than 2,000 compartments) and ten firewall bulkheads. Foam devices for fire-fighting are very well developed, and pumping equipment is excellent, a 15° list being correctable in 20 minutes. Thirty damage-control teams are available at all times. Nimitz-class ships can withstand three times the severe pounding taken by the Essex-class aircraft carriers in 1944-45, and they can take impacts and shock waves in the same proportion. They are being equipped with Kevlar armor over vital spaces during refits.

Machinery: The cores of these ships are expected to last 13 years (CVN 70: 15) in normal usage, for a cruising distance of 800,000 to 1,000,000 miles. The evaporators

can produce 1,520 tons of fresh water per day.

Aircraft-handling installations: There are four side elevators: two forward, one aft of the island to starboard, and one on the stern to port. There are also four C13 Mod. 1 steam catapults, 94.5 m long. CVN 69 and 70 have only the forward starboard bridle retrieval horn, because most aircraft in service do not require the bridle for launching. The 15,134 m³ total aviation magazine spaces can hold 1,954 tons of aviation ordnance, and the total aviation-associated payload is on the order of 15,000 tons. The hangar is 7.8 meters high and can accommodate only 35-40% of the aircraft aboard. The angled part of the flight deck is 237.7 meters long and has four Mk 14 arrester wires and a barrier to halt aircraft (to be changed to 3 wires, 1 net). Sufficient aviation fuel for 16 days' operations is carried. CVN 69 has the prototype AVCARS (Augmented Visual Carrier Aircraft Recovery System); the production version entered service 1984.

◆ 1 Enterprise class (SCB 160 type) — FY 58 Program

 Bldr
 Laid down
 L
 In serv.

 CVN 65 Enterprise
 Newport News SB & DD
 4-2-58
 24-9-60
 25-11-61

D: 73,500 tons light (90,970 fl) S: 33 kts

Authorized: FY 58

Dim: 335.75 (over catapult bridle horn: 342.3, wl: 317.0) × 40.54 (flight deck: 78.4) × 11.9

A: 86 airplanes and helicopters: 20 F-14, 18 F/A-18, 5 EA-6B, 20 A-6E, 5 E-2C, 10 S-3A, 8 SH-3A — 2/Mk 29 launchers (VIII × 2) for Sea Sparrow — 3/20-mm Mk 15 CIWS gatling AA (I × 3)

Electron Equipt: Radar: 1/LN-66, 1/SPS-65, 1/SPS-48C, 1/SPS-49, 1/SPN-41, 1/SPN-42, 1/SPN-35A, 1/SPN-44, 2/Mk 91 Mod. 1 (4 directors)



Enterprise (CVN 65)

NUCLEAR-POWERED AIRCRAFT CARRIERS (continued)



Enterprise (CVN 65)

G. Arra, 8-85



Enterprise (CVN 65)—rebuilt island, starboard side, with SPS-49 and SPS-48C radars atop superstructure, SPS-10F and SPN-35A on mast

G. Arra, 8-85

EW: WLR-1, WLR-8, WLR-11, SLQ-17(v)4, Mk 36 SRBOC chaff RL (VI × 4)
TACAN: URN-25

M: 8 Westinghouse A2W reactors, supplying 32 Foster-Wheeler heat exchangers; 4 sets Westinghouse GT; 4 props; 280,000 hp

Electric: 40,000 kw + 8,000 kw emergency

Man: 462 officers, 5,102 men (including 304/2,323 aviation personnel)



Enterprise (CVN 65)

G. Arra, 8-85

Remarks: Began what was to have been a two-year overhaul at Puget Sound NSY 15-1-79, during which the radar and other electronics suites were extensively renovated; completed 11-81. The SPS-32 and SPS-33 "billboard" radar arrays were removed, as was the "beehive" dome atop the blockhouse superstructure. A new mast, resembling that on the Nimitz, was installed atop the superstructure. SPS-48C and SPS-49 are mounted atop the island. There are four C13 Mod. 1 steam catapults and four elevators—one on the port side of the angled deck, three to starboard—two of which are forward of and one abaft the island. Elevators are steel and alloy and weigh 105 tons; 26 m long, 16 m wide, lift 45 tons. The hangar is 7.62 m high and the flight deck is more than 20,000 m2. Carries half again as much aviation fuel as the Forrestal class (8,500 tons), which permits 12 days of intensive aerial operations without replenishment. Carries fuel oil to replenish other ships. Has NTDS and ASCAC (Antisubmarine Classification and Analysis Center) and will receive TFCC (Tactical Flag Communications Center). A third Mk 29 Sea Sparrow SAM launcher and the Mk 23 TAS radar are to be added during the next major overhaul in the early 1990s. Air group to be updated to 20 F-14, 20 F/A-18, 20 A-6E/KA-6D, 5 EA-6B, 5 E-2C, 10 S-3, 6SH-3H.

CONVENTIONAL AIRCRAFT CARRIERS

♦ 1 John F. Kennedy class (SCB 127C type) Bldr: Newport News SB & DD

Program Laid down L In serv. CV 67 JOHN F. KENNEDY FY 63 22-10-64 27-5-67 7-9-68

D: 59,200 tons light (80,940 fl) S: 32 kts

Dim: 320.34 (301.8 wl) × 39.17 (flight deck: 81.38, max. 82.30) × 11.13
 A: 78 aircraft: 24 F-14, 24 A-6E, 4 KA-6D, 5 EA-6B, 5 E-2C, 10 S-3A, 6 SH-3H — 3/Mk 29 launchers (VIII × 3) for Sea Sparrow — 3/20-mm Mk 15

CIWS (I×3)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10F, 1/SPS-49, 1/SPS-48C, 1/SPN-35, 1/SPN-41, 2/SPN-42, 1/SPN-43A, 1/SPN-44, 3/Mk 91 Mod. 1 (6 directors), 1 Mk 23 TAS

EW: WLR-1, WLR-3, WLR-11, SLQ-26, SLQ-17, Mk 36 SRBOC RL (III \times 4)

 $\begin{array}{c} {\rm TACAN:\,URN\text{-}25} \\ {\rm M:\,\,4\,\,sets\,\,G.E.\,\,GT;\,4\,\,props;\,280,000\,\,hp} \end{array}$

Boilers: 8 Foster-Wheeler; 83.4 kg/cm², 520°C Electric: 17,000 kw Man: 535 officers, 5,224 men (including aviation personnel)

Remarks: Operates in the Atlantic Fleet. Four side elevators, three to starboard (two forward of and one abaft the island) and one on the port quarter. Completely automatic landing system, permitting all-weather operation. Four arrester wires and a



John F. Kennedy (CV 67)

L. & L. Van Ginderen, 5-84



John F. Kennedy (CV 67)



John F. Kennedy (CV 67) — note Chaffroc RL, 2 Sea Sparrow directors, island with canted stack French Navy, 6-82

barrier on the 227-m angled flight deck. Three 90-m C13 and one 94.5-m C13-1 catapults. Has PLAT, which facilitates the control of launching and recovery operations. Stack angled to starboard. The $11,\!808\text{-m}^2$ aviation-ordnance magazine can accommodate $1,\!250$ tons of ammunition. Carries $5,\!919$ tons of aviation fuel. Equipped to carry SQS-23 sonar in bow dome, but it was not installed. SPS-49 replaced SPS-43A in 1979-80, and SPS-58 was deleted. Obsolescent Chaffroc chaff RL replaced with Mk 36 SRBOC (VI \times 4), during 10-84 to 10-85 refit, when two additional Mk 15 CIWS and the Mk 23 TAS radar were also added.

• 3 Kitty Hawk class (SCB 127A and SCB 127B types)

| | Bldr | Laid down | L | In serv. |
|---------------------|-----------------|-----------|---------|----------|
| CV 63 KITTY HAWK | New York SB | 27-12-56 | 21-5-60 | 29-4-61 |
| CV 64 CONSTELLATION | Brooklyn NSY | 14-9-57 | 8-10-60 | 27-10-61 |
| CV 66 AMERICA | Newport News SB | 9-1-61 | 1-2-64 | 23-1-65 |

Authorized: CV 63 in FY 56, CV 64 in FY 57, CV 66 in FY 61

D: 60,100 tons (82,200 fl; CV 66: 79,700) S: 33 kts

Dim: 318.8 (CV 66: 319.25) (301.76 pp) × 39.62 (flight deck: 76.81) × 11.4 (CV 66: 11.3)

A: 86 aircraft: 24 F-14, 12 A-6E, 24 A-7E, 4 KA-6D, 4 EA-6B, 10 S-3A, 4 E-2C, 6 SH-3H-3/Mk 29 (CV 63: 2) launchers (VIII × 2 or 3) for Sea Sparrow-3/20-mm Mk 15 CIWS gatling AA (I × 3)



Kitty Hawk (CV 63)

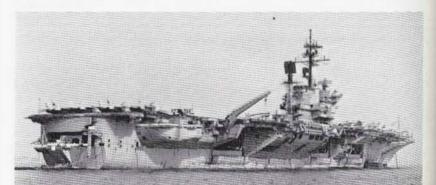
W. Donko, 7-85

G. Arra, 1984



America (CV 66)

L. & L. Van Ginderen, 10-84



America (CV 66)

L. & L. Van Ginderen, 9-85



America (CV 66)

L. & L. Van Ginderen, 9-85



Kitty Hawk (CV 63)

G. Arra, 10-83



Electron Equipt: Radar: 1/LN-66, 1/SPS-10F, 1/SPS-48C, 1/SPN-35, 1/SPN-41, 2/SPN-42, 1/SPN-43A, 2 or 3/Mk 91 Mod. 1 (4 or 6 directors)

EW: SLQ-29 (WLR-8 + SLQ-17); WLR-1H, WLR-11, Mk 36 SRBOC RL (VI \times 4)

TACAN: URN-25

M: 4 sets Westinghouse GT; 4 props; 280,000 hp Fuel: 7,800 tons Boilers: 8 Foster-Wheeler; 83.4 kg/cm², 520°C Range: 4,000/30; 8,000/20 Man: Approx. 5,400: 137 officers, 2,765 men + air group: 290 officers, 2,200 men Electric: 15,000 kw (CV 66: 18,000 kw)

Remarks: These ships are a great improvement over the Forrestal class, on which they are based, and have one significant difference: three elevators on the starboard side, two forward of and one abaft the island, and one to port, abaft the angled flight deck. Aircraft can be landed and catapulted simultaneously, a difficult operation on the earlier ships. Four C13 steam catapults, except on CV 66, on which one is of the longer C13-1 type. Carry 5,882 tons of aviation fuel. CV 66 was the first ship to receive the Mk 15 CIWS, in 4-80. CV 63 has only two Mk 29 launchers for Sea Sparrow. CV 64 retained two Mk 10 twin launchers for Terrier HT missiles and two SPQ-55B radar directors until 12-82 to 2-84 refit at Bremerton. CV 66 was the first to have a special integrated CIC and airborne ASW control center (ASCAC). CV 66 had an SQS-23 bow sonar until 1981. CV 63 is to enter SLEP (Service Life Extension Program) 11-87, emerging in 5-90 with new catapult rotary engines, Mk 7 Mod. 3 arrester gear (3 wires), SPN-46 landing-aid radar, SPS-48E and SPS-49(V) upgrade air-search radars, updated NTDS (Naval Tactical Data System), a torpedo decoy system, the WQN-1 "channel-finder" sonar, upgraded EW equipment, and the Mk 23 TAS low-altitude radar added. CV 64 is to undergo a similar SLEP from 12-89 to 6-92. CV 66 is not scheduled for SLEP until 1994-96, but will receive Mk 23 TAS during regular overhaul in the late 1980s.

Air groups being modified, with 18 A/F-18 replacing the 24 A-7E, the number of F-14 being reduced to 20. CV 63 and CV 64 are in the Pacific, CV 66 in the Atlantic Fleet.

♦ 4 Forrestal class (CV 59: SCB 80 type, CV 60 to CV 62: SCB 80M type)

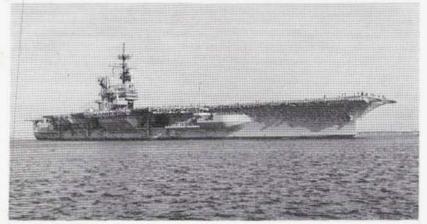
| | Bldr | Laid down | L | In serv. |
|--------------------|----------------------|-----------|----------|----------|
| CV 59 FORRESTAL | Newport News SB & DD | 14-7-52 | 11-12-54 | 1-10-55 |
| CV 60 SARATOGA | Brooklyn NSY | 16-12-52 | 8-10-55 | 14-4-56 |
| CV 61 RANGER | Newport News SB & DD | 2-8-54 | 29-9-54 | 10-8-57 |
| CV 62 INDEPENDENCE | Brooklyn NSY | 1-7-55 | 6-6-58 | 10-1-59 |

Authorized: CV 59 in FY 52, CV 60 in FY 53, CV 61 in FY 54, CV 62 in FY 55



Ranger (CV 61) - post-overhaul, with Mk 23 TAS on mast

USS Ranger, 6-85



Ranger (CV 61) - note sponsons forward

G. Arra, 1-86



Forrestal (CV 59)—at conclusion of SLEP—Mk 14 CIWS not yet added G. Arra, 5-85



Independence (CV 62) - prior to SLEP

L. & L. Van Ginderen, 3-84



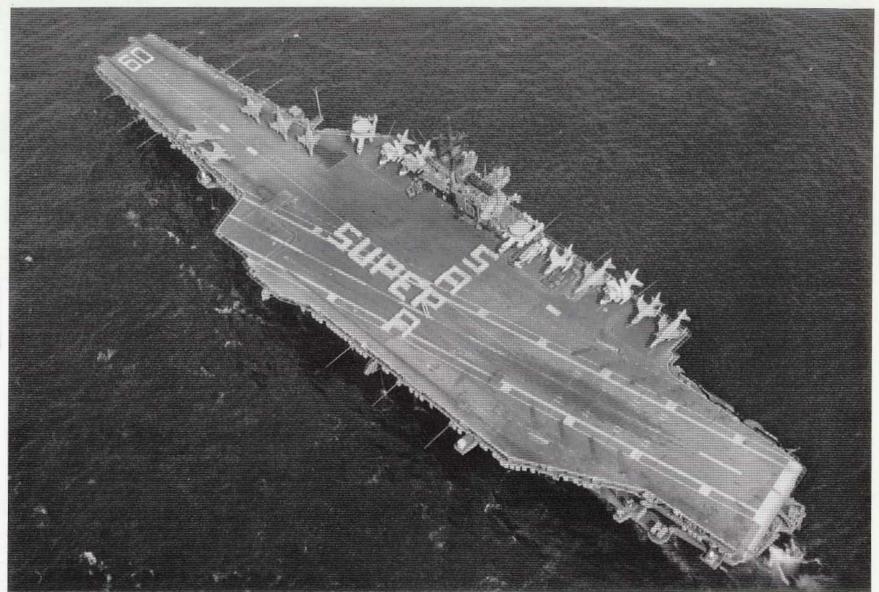
Saratoga (CV 60)

PH3 L. Hilley, USN, 4-84



Saratoga (CV 60) -- bow view

G. Gyssels, 6-84



Saratoga (CV 60) -post-SLEP modernization

U.S. Navy, 1984



Independence (CV 62) - stern view

L. & L. Van Ginderen, 5-84

D: CV 59, 60: 59,600 tons (78,200 fl); CV 61, 62: 60,000 tons (79,200 fl) S: 33 kts
Dim: CV 59: 331.0; CV 60: 324.0; CV 61: 326.4; CV 62: 326.1 (319.13 flight deck, 301.8 wl) × 39.63 (CV 59, 60: 76.3; CV 61, 62: 82.3 max.) × 11.3

A: 86 aircraft: 20 F-14, 20 F/A-18, 16 A-6E, 4 KA-6D, 5 EA-6B, 10 S-3A, 5 E-2C, 6 SH-3H-2 Mk 29 (CV 60, 62: 3) launchers (VIII × 2 or 3) for Sea Sparrow — 3/20-mm Mk 15 CIWS gatling AA (I × 3)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-49, 1/SPS-48C, 1/SPN-35, 1/SPN-41, 2/SPN-42, 1/SPN-43A, 2 or 3/Mk 91 Mod. 1 (4 or 6 directors); CV 61 also: Mk 23 TAS EW: WLR-1, WLR-3, WLR-11, SLQ-26, Mk 36 SRBOC chaff RL (VI×4)

TACAN: URN-25

M: 4 sets G.E. or Westinghouse GT; 4 props; CV 59: 260,000 hp, others: 280,000 hp

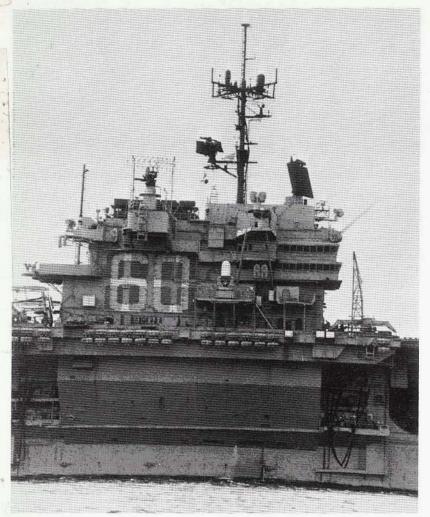
Boilers: 8 Babcock & Wilcox; CV 59: 41.7 kg/cm², other: 83.4 kg/cm², 520°C

Fuel: 7,800 tons Range: 4,000/30; 8,000/20

Man: Approx. 4,940: 145 officers, 2,645 enlisted + air group: 290 officers, 3,100

Remarks: CV 61 in Pacific Fleet, others in the Atlantic. Hangar is 7.6 m high and 234–240 m long. Four side elevators (15.95 × 18.9). Deck angled at 8°. Armored flight deck. Four-cable arresting gear. CV 59 and CV 60 have two Mk-C7 (75 m) and two Mk-C11 (65 m) steam catapults; the others have four Mk-C7. Carry 5,880 tons of aviation fuel. CV 59 has three rudders and four propellers, the two outboard being five-bladed, the two inboard, four-bladed. Deck protection and internal compartmentation are extensive (1,200 watertight compartments). Two longitudinal bulkheads are fitted from keel to waterline from stem to stern; there are transverse bulkheads about every 10 meters. Air groups evolving as F/A-18 replaced A-7E; earlier ships carried 24 F-14, 12 A-6E, 24 A-7E. CV 61 carries: 24 F-14, 28 A-6E/KA-6D, 10 S-3, 6 SH-3H, 5 E-2C, and 5 EA-6B.

CV 60 received first SLEP (Service Life Extension Program) modernization, beginning 1-10-80 at Philadelphia Navy yard, completing 2-83 (but boiler defects kept her inoperative until 18-11-83). CV 59 SLEP from 21-3-83 to 20-5-85; CV 62 planned 18-4-85 to 8-87. Ranger not scheduled for SLEP until 1-92 to 5-94, but did get extensive overhaul at Puget Sound NSY 5-84 to 6-85, when improved evaporators, Halon and aqueous film firefighting systems, Mk 23 TAS, and 3 Mk 15 CIWS were added. All will ultimately be armed with three Mk 29 Sea Sparrow launchers, each with two directors, three Mk 15 CIWS Vulcan/Phalanx gatling guns, and the Mk 23 TAS low-altitude radar. All catapults will be replaced with longer and more powerful C13s. The ships will get Kevlar armor, improved data systems, the Tactical Flag



Saratoga (CV 60) - SPS-49 on platform abreast stack, SPS-48 atop bridge, 2 Mk 91 directors, one above the other, separate platforms for Mk 15 CIWS and SRBOC

G. Gyssels, 6-84

Command Center, and more habitability. All originally carried eight 127-mm/54, Mk 42 guns. CV 61 relinquished her last two guns in 1977, later than her sisters did, and retains her forward gun sponsons. Stacks raised 3 m in CV 59 and 62.

♦ 2 Midway class Bldr: Newport News SB & DD

| | Laid down | L | In serv. |
|-----------------|-----------|---------|----------|
| CV 41 MIDWAY | 27-10-43 | 20-3-45 | 10-9-45 |
| CV 43 CORAL SEA | 10-7-44 | 2-4-46 | 1-10-47 |

D: CV 41: 53,400 tons light (67,000 ft) — CV 43: 48,000 tons (65,200 ft) S: 33 kts Dim: CV 41: 306.78 (274.32 wl) × 55.78 (36.88 wl) × 10.97

CV 43: 306.00 (274.32 wl) × 47.55 (36.38 wl) × 10.67 A: 76 aircraft — 48 F/A-18, 10 A-6E, 4 KA-6D, 4 EA-6B, 4 E-2C, 6 SH-3H — CV 41: 2/Mk 25 launchers (VII × 2) for Sea Sparrow — 2/20-mm Mk 15 CIWS AA (I × 2) — CV 43: 3/20-mm Mk 15 CIWS

Electron Equipt: Radar: CV 41: 1/LN-66, 1/SPS-65, 1/SPS-49, 1/SPS-48C, 2/SPN-42, 1/SPN-44, 2/Mk 115; CV 43: 1/LN-66, 1/SPS-67, 1/SPS-49, 1/SPS-48C, 1/SPN-41, 2/SPN-42, 1/SPN-43A EW: WLR-1, WLR-10, WLR-11, Mk 36 SRBOC chaff RL

 $(VI \times 4)$ TACAN: URN-25



Midway (CV 41)

G. Arra, 1984



Midway (CV 41)

L. & L. Van Ginderen, 9-84



Coral Sea (CV 43) - post-refit, with Mk 15 CIWS recessed for protection, new radars G. Arra, 2-85



Midway (CV 41) - with F-4, A-7, EA-6B, A-6E, E-2C, and SH-3H aircraft on deck

Ships of the World, 9-84

M: 4 sets Westinghouse GT; 4 props; 212,000 hp Electric: 11,700 kw

Boilers: 12 Babcock & Wilcox; 41.7 kg/cm2, 454°C

Man: CV 41: 402 officers, 4,278 enlisted (including aviation personnel)

CV 43: 411 officers, 4,320 enlisted (including aviation personnel)

REMARKS: CV 43 transferred to the East Coast 1983 and was modernized at Norfolk for service up to 1992, when she will replace Lexington (AVT-16) as training carrier; re-entered service 29-1-85, but was damaged in collision 11-4-85, losing 11 m of the bow; repaired by 7-85. CV 41, home-ported at Yokosuka, Japan, is having larger bulges added 1985-86 to improve stability and is to be retained in service to the end of the century. Sister Franklin D. Roosevelt (CV 42) was stricken on 1-10-72. Machinery and ships' bottoms very similar to the Iowa-class battleships.

Two side elevators to starboard, one forward of and one abaft the island; one side elevator to port abaft the angled flight deck. CV 41 has a considerably larger flight deck than does CV 43. CV 41 has two C13 steam catapults (both forward) and three arrester wires on the angled deck. CV 43 retains three C11-1 steam catapults. CV 43 carried the listed air group in 1985, CV 41 will carry the same on completion of refit in

Refits: From 1954 to 1963, the ships underwent several overhauls: angled flight deck installed; flight deck lengthened; hydraulic catapults replaced with steam ones; side armor removed and "bulges" added. Reinforced arresting gear and barriers installed; centerline elevators replaced with side ones; aviation fuel capacity increased. In October 1967 CV 41 began another major overhaul and returned to service in 1-70. Her angled flight deck was extended to port; her three elevators were enlarged; her forward port elevator was moved aft; her catapults were replaced by more powerful ones; and all her electronic equipment was replaced. In 1979-80, during short overhauls at Yokosuka, CV 41's radar suit was updated and the Tactical Flag Command Center was added. CV 43 was overhauled 11-78 to 10-79 at Puget Sound NSY, where her catapults were brought up to C13 capability.

RESERVE AIRCRAFT CARRIERS

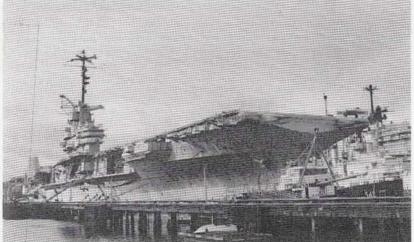
4 Essex,* and Hancock† class (all in reserve)

| | Bldr | Laid down | L | In serv. |
|---------------------------|-----------------|-----------|----------|----------|
| CVS 12 HORNET* | Newport News SB | 3-8-42 | 29-8-43 | 29-11-43 |
| CVS 20 Bennington* | New York NSY | 15-12-42 | 26-2-44 | 6-8-44 |
| CVA 31 BON HOMME RICHARD† | New York NSY | 1-2-43 | 29-4-44 | 26-11-44 |
| CV 34 Oriskany† | New York NSY | 1-5-44 | 13-10-45 | 25-9-50 |



Bennington (CVS 20) - Essex class

U.S. Navy, 1967



Oriskany (CV 34) - in reserve at Bremerton

G. Arra, 10-85

D: Approx. 33,000 tons (40,600 to 41,900 fl) S: 30+ kts

Dim: 274.01 (CVS 38: 270.97) (249.9 wl) × 31.39 (CV 34: 32.46) (flight deck: approx. 58.5 × 9.45)

A: 4/127-mm DP (I × 4), except CV 34: 2/127-mm DP (I × 2)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-30, 1/SPS-43A (CVS 11, CV 34: SPS-37), 1/SPN-10, 1/SPN-43, 1-2/Mk 25, 0-4 Mk 35

Sonar: CVS only: SQS-23 (bow-mounted) TACAN: URN-6 or URN-20

M: Westinghouse GT; 4 props; 150,000 hp

Boilers: 8 Babcock & Wilcox; 41.7 kg/cm2, 454°C Electric: 7,000 kw

Fuel: 6,750 tons Range: 18,000/12 Man: None

Remarks: All in Category "C" reserve, all berthed at Bremerton, Washington. CV 34 was placed in reserve on 30-9-76; recommissioning (to cost approx. \$510 million), to take 28-34 months, proposed by Reagan Administration for FY 82 but was turned down by Congress. Sister Intrepid (CVS 11) stricken 27-4-81 and transferred to New York City as a memorial; Shangri La (CVS 38) stricken 15-7-82, had been placed in reserve 30-7-71. Lexington (formerly CVT 16) was redesignated AVT 16 on 1-7-78 and is used for training in deck landing; see entry in auxiliary section. CVS 12 was decommissioned on 15-1-70, CVS 20 on 30-6-69, and CVA 31 on 2-7-71. CVS 12 and CVS 20 retain their Mk-H8 hydraulic catapults; the others have C8 steam catapults. All have three elevators: one on the centerline between the catapults, one at the forward end of the angled deck, and one (vertically stowable) to starboard, abaft the island. Four arrester wires. CV 34 has two Mk 37 gun directors. The others have one Mk 37 and two or three Mk 56 directors.

NAVAL AND MARINE CORPS AVIATION

Aviation is an integral part of the U.S. Navy and Marine Corps. There were approximately 6,083 aircraft assigned on 1-1-85:

148 air early warning 134 strike fighters 1,156 jet trainers 1,437 helicopters 878 fighters 138 transports 6 special mission 1,284 attack aircraft 60 aerial refueling 168 shipboard ASW 94 observation 39 drones 114 utility 427 patrol

Some 36 basic fixed-wing aircraft designs (in 99 different sub-variants) and 8 basic helicopter designs (in 34 sub-variants) are flown.

The U.S. Air Force has programmed conversion of two 15-aircraft B-52G squadrons (one for each coast) for sea control duties. The B-52G will carry up to 12 Harpoon missiles externally and 8 internally and will have a 2,000 n.m. combat radius with 2 hrs.

Air squadrons are designated by an alphanumerical system, the letter prefixes for the principal squadron types being ("X" denotes various models in aircraft type listings):

Navy:

HC Helicopter Combat Support (CH-46) HM Helicopter Mine Countermeasures (RH-53D, MH-53E) HS Helicopter Antisubmarine (SH-3) HSL Light Helicopter Antisubmarine (SH-2) Helicopter Training (TH-57X, UH-1E, TH-1L) HT Light Attack (A-7) VAL

Medium Attack (A-6, KA-6) VAM Tactical Electronic Warfare (EA-6B) VAQ

VAW Carrier Airborne Early Warning (E-2C) VC Fleet Composite (utility aircraft) VE

Fighter (F-4, F-14, F-18) Light Photographic (RF-8G) VFP Patrol (P-3) VP

VQ Fleet Air Reconnaissance (EP-3, EA-3B), also: Communications Support (EC-130) Fleet Logistics Support (C-9, C-130, C-131, etc.) VR

VRC Fleet Logistics Support-COD (Carrier Onboard Delivery)

(C-1A, C-2A) VRF Aircraft Ferry

VS Air Antisubmarine (S-3A) Training (TA-4J, T-28, T-2C, T-39D, T-44A) VT

VX Air Test and Evaluation Antarctic Development (LC-130F, UH-1) VXE Oceanographic Development (RP-3A/D) VXN

Marine Corps:

Marine Attack Helicopter (AH-1) HMA Marine Heavy Helicopter (CH-53) HMH HML Marine Light Helicopter (UH-1X) HMM Marine Medium Helicopter (CH-46) Marine Attack (A-4X, A-6E, AV-8X) VMA Marine Electronic Warfare (EA-6B) VMAQ Marine Fighter-Attack (F-4, F/A-18) VMFA Marine Photo Reconnaissance (RF-4B) VMFP **VMGR** Marine Refueler-Transport (KC-130F) VMO Marine Observation (OV-10)

* Naval Aviation 1985

Navy first-line combat squadrons include:

3 fighter-attack with F/A-18 Hornets

24 fighter with F-14 Tomcats and F-4 Phantom-IIs

22 light attack with A-7E Corsair-IIs

12 heavy attack with A-6E and KA-6D Intruders

9 tactical electronic warfare with EA-6B Prowlers

12 carrier airborne early warning with E-2B/C Hawkeyes 24 patrol with P-3B/C Orions

11 antisubmarine with S-3A Vikings

12 helicopter antisubmarine with SH-3H Sea Kings and SH-60B Seahawks

6 light helicopter antisubmarine with SH-2F Seasprites

Naval Reserve Force combat squadrons include:

4 fighter with F-4N/S Phantom-IIs

6 light attack with A-7B/E Corsair-IIs

2 tactical electronic warfare with EA-6A Prowlers

2 carrier airborne early warning with E-2B/C Hawkeyes

13 patrol with P-3A/B Orions

2 carrier refueling with KA-3B Skywarriors

4 helicopter antisubmarine with SH-3D Sea Kings

1 light photographic with RF-8G Crusaders

The combination of all the aircraft on board an aircraft carrier is called a Carrier Air Wing (CAW), whose composition varies according to the carrier's mission. There are three basic types of air wing: one to project power or support landing operations; one to control the sea, with emphasis on antisubmarine warfare and the protection of ships; and one to perform the two previously mentioned missions at the same time.

Marine Corps Aviation

The Marines operate a considerable air force, with all aircraft procured and "owned" by the Navy. U.S.M.C. aircraft are intended to operate principally from amphibious-warfare ships, but squadrons of attack, reconnaissance, and electronic-warfare aircraft frequently operate from carriers as well. The air complement in 1984 was:

| Tactical Fixed-Wing Squadrons | uadrons | Fixed-Wing Training Se 4 Squadrons | quadrons |
|--|---------------------|---|--------------------------|
| Type Fighter (F-4N, F/A-18A) All Weather Attack (A-6E) | Number 144 50 | Type Fighter (F-4) All Weather Attack (A-6) Light Attack (A-4) | Number 27 15 37 |
| Light Attack (AV-8, A-4M) 120 ECM (EA-6B) 15 Reconnaissance (RF-4B) 21 | | Land Force Aviation Training 3 Squadrons | |
| Tanker (KC-130) TAC(A) (OV-10) | 40 29 | Type Heavy Lift (CH-53) Medium Lift (CH-46) Attack (AH-1T) | Number 32 20 12 |
| | | Utility (UH-1) | 8 |

| | | Base and Command Support | | |
|------------------------|---------|--------------------------|--------|--|
| Land Force Aviation Sq | uadrons | 1 Sq | uadron | |
| 29 Squadrons | | Type | Number | |
| Type | Number | VP-3A | 1 | |
| Heavy Lift (CH-53D/E) | 128 | C-9 | 2 | |
| Medium Lift (CH-46D/E) | 180 | CT-39 | 5 | |
| Attack (AH-1J/T) | 72 | UC-12 | 12 | |
| Utility (UH-1) | 72 | HH-46 | 12 | |
| Observer | 36 | H-1 | 4 | |

NAVY AIRCRAFT PROCUREMENT PLAN FY 87

| | FY 84 | FY 85 | FY 86 | FY 87 | FY 88 | FY 89 | FY 90 |
|-------------------------|-------|-------|-------|-------|-------|---------|-------|
| A-6E/F (Intruder) | 6 | 6 | 11 | 11 | 12 | 18 | 24 |
| EA-6B (Prowler) | 6 | 6 | 12 | 12 | 12 | 12 | 12 |
| F-14A/D (Tomcat) | 24 | 24 | 18 | 15 | 12 | 18 | 24 |
| F/A-18A (Hornet) | 84 | 84 | 84 | 120 | 132 | 132 | 163 |
| AV-8B (Harrier) | 27 | 32 | 46 | 42 | 42 | 42 | 42 |
| SH-2F (Seasprite) | 6 | 6 | 6 | 6 | _ | _ | |
| CH-53E (Super Stallion) | 11 | 10 | 4 | 4 | 4 | 4 | 4 |
| MH-53E (Sea Dragon) | _ | | 10 | 10 | 10 | 10 | 8 |
| SH-60B (Seahawk) | 24 | 24 | 18 | 17 | 6 | 6 | 6 |
| SH-60F | | - | | 7 | 24 | 30 | 30 |
| UH-60A | - | 2 | 4 | | | 3 | 3 |
| VH-60 | - | 9 | - | - | - | - | - |
| P-3C (Orion) | 5 | 9 | 9 | 9 | 8 | 8 | 8 |
| RP-3D (Orion) | _ | _ | _ | - | 1 | 1 | 1 |
| MV-22A (Osprey) | - | - | - | - | - | 18 | 42 |
| E-2C (Hawkeye) | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| C-9B (Skytrain II) | 8 | 4 | _ | | _ | - | |
| UC-12B/CX | - | 12 | 12 | 12 | - | - | - |
| C-2A (Greyhound) | 6 | 8 | 8 | 9 | - | and the | - |
| T-34C (Mentor) | _ | _ | 38 | _ | - | _ | - |
| T-44A (King Air) | _ | | _ | | - | - | 15 |
| T-45A (Goshawk) | - | - | - | | 12 | 24 | 24 |
| TH-57 (Sea Ranger) | 21 | 36 | - | _ | _ | | - |
| E-6A | _ | - | 2 | 3 | 3 | 3 | 3 |
| KC-130T (Hercules) | 2 | 2 | _ | _ | - | - | - |
| F-16N | 4 | 10 | 12 | _ | - | - | - |
| C-2 Kfir (lease) | | 12 | 13 | - | - | | - |
| Boeing 707 FEWSG | 1 | - | _ | _ | _ | - | _ |

· Aircraft Losses

Operational loss rates remain high, largely because of the intense tempo of U.S. Navy flight operations. In 1982, 88 aircraft were lost, while in 1983, 87 were lost. In 1984 the

number lost fell to 69: 1/F/A-18, 4/F-4, 4/F-14A, 7/A-6, 3/EA-6B, 13/A-7, 4/A-4, 9/TA-4, 1/AV-8, 2/T-2, 1/T-34, 1/T-44, 1/H-1, 4/H-2, 2/H-3, 2/H-46, and 4/H-53.

Aircraft Designations

Besides the name given to an aircraft — Phantom, Intruder, Orion, etc. — each type is designated by a group of letters and figures divided by a hyphen and made up in the following manner:

1. The letter immediately preceding the hyphen indicates the principal mission:

A—attack P—patrol
B—bomber S—antisubmarine
C—cargo/transport T—training
E—airborne early warning
F—fighter V—VTOL/STOL, vertical or short takeoff and landing
O—observation X—research

The figure that comes immediately after the hyphen is the design sequence number. When a letter follows this figure, its position in the alphabet indicates that the aircraft is the first, second, third, etc. modification to the original design.

Example: A-4E = an attack aircraft, the fourth attack plane design, the fifth modification.

When an aircraft is assigned to duty that is not its principal mission, a second letter precedes the letter of that mission (see para. 1 above):

| A-attack | M-missile carrier or mine-countermeasures |
|---------------------------------------|---|
| C-cargo/transport | Q — drone aircraft |
| D-direction or control of drones, | R-reconnaissance |
| aircraft, or missiles | S—antisubmarine |
| E-special electronic installation | T—trainer |
| H-search and rescue | U—utility, general service |
| K-tanker, inflight, refueling | V—staff |
| L-cold weather; for arctic regions | W—weather, meteorology |
| 4. A third prefixed letter in front o | f an aircraft's designation means: |
| G-permanently grounded | X-experimental |
| J-temporary special test | Y—prototype |

CURRENT U.S. NAVY MARINE CORPS AIRCRAFT DESIGNATIONS

Z-planning

A Attack

N-permanent special test

| • Attack | |
|------------|--|
| A-3 SKYW | ARRIOR: |
| EA-3B | ECM mission equipment |
| KA-3B | Tanker |
| ERA-3B | FEW support group configuration |
| TA-3B | Bombardier/navigator training version |
| VA-3B | High-speed personnel transport |
| A-4 SKYHA | AWK: |
| A-4E | J-52, basic attack |
| A-4F | A-4E with improved systems |
| EA-4F | ECM version of TA-4F |
| TA-4F | Two-place training version |
| TA-4J | Advanced training version of TA-4F |
| A-4M | Uprated engine and improved system |
| OA-4M | TA-4F modified to TACA configuration |
| A-6 INTRU | DER: |
| EA-6A | ECM mission equipment |
| EA-6B | ECM mission |
| KA-6D | A-6A configured as tanker |
| A-6E | A-6A with improved systems |
| A-7 CORSA | IR II: |
| A-7B | A-7A with improved engine |
| A-7C | Advanced weapon delivery system |
| TA-7C | A-7B/C modified to two-place trainer |
| A-7E | A-7B with TF-41 and improved weapons systems |
| F/A-18 HOI | RNET: |
| F/A-18A | First-line fighter/attack aircraft |
| TF/A-18A | Two-place trainer version |
| AV-8 HARE | MER: |
| AV-8A | Single-place, attack |
| TAV-8A | Two-place trainer version |
| AV-8B | Major redesign, improved capability |
| AV-8C | AV-8A reworked, modernized |

· Fighters

EF-4J

| F-4 PHA | NTOM: |
|---------|------------------------------|
| QF-4B | F-4B target drone |
| RF-4B | Photoreconnaissance |
| F-4J | Improved systems and engines |

EW version

F-4N Converted/Improved F-4B F-4S F-4J modified for extended life

F-5 TIGER II:

F-5E Adversary aircraft F-5F Two-place version

F-8 CRUSADER:

RF-8G Photoreconnaissance

F-14 TOMCAT:

Front-line fighter aircraft, TF-30 F-14A

F-14D Improved systems F-16 FIGHTING FALCON:

F-16N Adversary aircraft

F-21 KFIR:

F-21A Adversary aircraft

· Utility

OV-10 BRONCO:

COIN/LARA twin turboprop OV-10A

OV-10D Night gunship

* Patrol

P-3 ORION

P-3A Land-based ASW, T56-A-10W engine EP-3A Electronic reconnaissance configuration

RP-3A Special T&E and ocean research

VP-3A Personnel transport

P-3A with T56-A-14 engines P-3B EP-3B Electronic reconnaissance P-3C Improved avionics systems RP-3D Configured for Project Magnet EP-3E Electronic reconnaissance

♦ Cargo Transport

C-1 TRADER:

C-1A COD transport, twin engines, piston R-1820s

C-2 GREYHOUND:

Carrier logistics C-2A

C-9 SKYTRAIN II:

C-9B Commercial DC-9

C-12 SUPER KING AIR:

UC-12B Passenger logistics

C-130 HERCULES:

C-130F Turboprop logistics transport KC-130F Tactical tanker/cargo transport LC-130F Polar use, ski/wheel gear EC-130G TACAMO

Improved TACAMO EC-130Q KC-130R Improved tanker LC-130R Improved polar version

KC-130T Improved avionics, tanker capabilities

C-131 SAMARITAN:

C-131F Convair 340 cargo version C-131G Convair 440 cargo version Modified turboprop C-131H

Antisubmarine Warfare

S-3 VIKING:

Carrier-based ASW aircraft S-3A

US-3A Utility version S-3B Improved avionics

Airborne Early Warning

E-2 HAWKEYE:

TE-2A Training version TE-2B Training only

AEW aircraft, carrier-based E-2B

E-2C Improved system

* Trainers

T-2 BUCKEYE:

T-2B Two-engine jet trainer, J60 engines

T-2C J85 engines

C-4 ACADEME/GULFSTREAM:

TC-4C Bombardier/navigator trainer, prop

T-34 MENTOR:

T-34B Primary trainer, single-engine, piston 0-470-4 engine

T-34C Improved systems, PT6A-25 turboprop T-39 SABRELINER:

Pilot/NFO trainer, jet T-39D CT-39E Rapid response airlift

Modified CT-39E, lengthened fuselage CT-39G

T-44 KING AIR:

T-44A Advanced multiengine trainer

T-45 GOSHAWK:

T-45A Advanced jet trainer

Tilt-Wing Aircraft (JVX)

V-22 OSPREY:

MV-22A Marine Corps Transport

♦ Airborne Mine Countermeasures

H-53 SEA STALLION/SUPER STALLION:

Sea Stallion, twin-engine, AMCM, logistics (see HELICOPTERS)

Sea Dragon, three-engines, AMCM version of the CH-53E MH-53E

Helicopters

UH-1 IROQUOIS/HUEY:

UH-1E Single rotor, T53-L-11 engine

T53-L-13 engine, similar to UH-1E, orange paint HH-1K

Trainer, UH-1E armor/armament deleted, T53-L-13 engine TH-1L

UH-1L Utility, UH-1E, T53-L-13 engine

UH-1M T53-L-13 engine

UH-1N Special transport, twin-engine T400-CP-400

VH-1N Executive version

AH-1 SEA COBRA:

Attack version, T53-L-13 engine AH-1G USMC avionics, T400-CP-400 engine AH-1J AH-1T Modified AH-1J, T400-WV-402 engine

H-2 SEASPRITE:

LAMPS MK 1 sea-based ASW SH-2F

H-3 SEA KING:

HH-3A Search and rescue, T58-GE-8 engines Sea-based ASW, amphibious, twin-engine SH-3A

UH-3A Utility

VH-3A Executive transport

SH-3D SH-3A with T58-GE-10 engines

VH-3D Executive transport

Improved SH-3A, sea-based ASW and logistics SH-3G

SH-3H SH-3G for sea-based ASW/ASMD, T58-GE-10 engines

H-46 SEA KNIGHT:

CH/UH-46A with improved systems HH-46A

UH-46A Utility version

CH-46D Improved engines, T58-GE-10 engines Utility version, T58-GE-10 engines UH-46D Improved engines, T58-GE-16 engines CH-46E

CH-46D with instrument panel changes CH-46F

H-53 SEA STALLION:

CH-53A Two-engine assault helicopter, T64-GE-6B engines

CH-53D Improved engines, T64-GE-413 engines

RH-53D **AMCM**

H-53E SUPER STALLION:

CH-53E Three-engine

AMCM version of CH-53E, larger fuel tanks MH-53E

H-57 SEA RANGER:

TH-57A Trainer

Advanced Instrument Trainer TH-57C

SH-60 SEAHAWK:

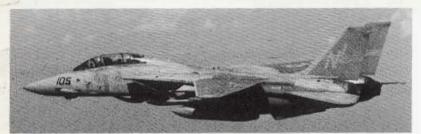
SH-60B Sea-based LAMPS MK III ASW Carrier-based, dipping-sonar SH-60F

UH-60 Combat SAR VIP transport VH-60



F/A-18 Hornet fighter bombers

McDonnell Douglas, 1981



F/F-14 Tomcat, all-weather fighter

U.S. Navy, 9-83



F/F-14s of VF-33 aboard CV 66

L. & L. Van Ginderen, 9-85



F-4S-U.S. Marines

McDonnell Douglas, 1-82



Four A-6E Intruder heavy attack aircraft—with Mk 82 bombs

Grumman, 1981



AV-8A Harrier attack aircraft (Marine Corps)





AV-8B Harrier attack aircraft (Marine Corps)

McDonnell Douglas, 10-82

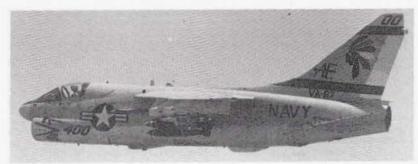


A-4F Skyhawk attack aircraft of VT-43

S. Terzibaschitsch, 4-84



ERA-3B Skywarrior — one of 12 EW "Whales," shadowing a Tu-95 Bear D U.S. Navy, 9-83



A-7E Corsair light attack aircraft

U.S. Navy, 1982



RF-8G Crusader reconnaissance aircraft (Naval Reserve)



P-3C Orion patrol aircraft

PH1 W. Wickham, USN, 1980



C-2A Greyhound COD (Carrier On-board Delivery) aircraft

1981



SH-3A Viking ASW aircraft

French Navy, 1981



Bronco observation/attack/OV-10 utility aircraft, USMC

PH2 C. Griffin, USN, 9-80



SH-3H Sea King ASW helicopter

W. Donko, 7-84



SH-2F Sea Sprite LAMPS-I ASW helicopter

Kaman, 1982



CH-46E Sea Knight transport helicopter

S. Terzibaschitsch, 4-84



SH-60B Seahawk LAMPS-III ASW helicopter

Sikorsky, 1980



EA-6B Prowler electronics warfare aircraft - low-visibility paint

Grumman, 1981



E-2C Hawkeye early-warning aircraft

Grumman, 1976



AH-1 Sea Cobra with Sidearm trials missile, USMC S. Wyatt, USN, 10-81

PRINCIPAL COMBAT AIRCRAFT

| Class, builder | Mission | Wingspan in m | Length in m | Height in m | Weight in kg | Engine | Max speed Mach/knots | Ceiling in feet | 1) Ferry range (nautical miles) 2) Combat radius (nautical miles) 3) Range (hours) |
|---|--|--|--|------------------------------------|--|---|--|--------------------|--|
| SHIP-BASED FIXED WING: F/A-18A Hornet (McDonnell Douglas) | Multirole fighter (Navy) | 11.43 | 17.07 | 4.67 | 10,437 (empty) 32,150 (max.) | 2 G.E. F404-GE-400 6,800-kg thrust each | M 1.8 | 49,400 | 1,600 450 with 1,814 kg payload |
| | Armament: 5,900 k | g of conventional o | or nuclear bombs | ; 2/Sidewinde | er; 4/Sparrow-III; 1 | /20-mm M61A1 cannon. APG | 65 radar; FLIR pod b | eing added. | |
| | | | | | | is weapons. A two-seat TF-18 is first of 10 planned Naval Rese | | | ocurement of at least |
| F-14A/D Tomcat (Grumman) | Two-man all-weather fighter with variable- geometry wing | 19.53/ 11.63 | 18.85 | 4.88 | 28,236 (18,186 empty) (F-14D: 32,865 max.) | 2 P&W TF30-P-414A 9,480-kg thrust each, with afterburners | M 2.34 | 60,000 | 2,000 500 2.50 to 3 |
| | | | | | nd 2/Sparrow miss econnaissance pod. | iles or 3,856 kg of Sparrow and S | Sidewinder missiles of | bombs, incl | uding nuclear bombs, |
| | AWG-9 radar, ar | | nprovements, is | slated to supp | | ed: 120 knots. The F-14D, using production under FY 1988. The | | | |
| F-4 N/S Phantom (McDonnell Douglas) | All-weather fighter (Navy) fighter-bomber (Marine Corps) | 11.71 | 17.75 | 4.96 | 24,767 (12,700 empty) | 2 G.E. J79-GE-8 10B 8,120-kg thrust each, with afterburners (RF-4B: G,E,J,N: 79-GE-8 | M 2.2 | 51,800- 55,000 | 2,300 900 2.25 |
| | | | | | ons) or 6/Sparrow surface rocket pod | III or 7,258 kg of missiles, rockes. | ets, or bombs: 18/340- | kg, 15/309-l | kg, 11/454-kg bombs; |
| | | | | | | 0 knots. 235 F-4B/J upgraded our Reserve squadrons fly F-4 | | s, new avion | ics, etc. RF-4B to get |
| A-4M Skyhawk (McDonnell Douglas) | Attack (Navy Reserve and Marine Corps) | 8.38 | 12.50 | 4.57 | 10,904 (4,747 empty) | 1 P&W J52-P-408A 5,080-kg thrust | 504 kts (sea level) 537 kts (10,000 ft) | 33,250 | 2,055 150 at 396 kt. 2.12 |
| | Armament: 2/20-mr | n Mk 12 guns; 2,98 | 50 kg (12 MU 81) | bombs, rock | ets. To be equipped | with Maverick missiles. | | | |
| | | | | | | rons, but Navy use is by Reserve t TA-4F and J trainers also in | | | |
| A-6E Intruder (Grumman) | All-weather attack (Navy and Marine Corps) | 16.15 | 16.67 | 4.92 | 27,392 (11,627 empty) | 2 P&W J52-P8A/8B 4,218-kg thrust each | 594 kts | 52,700 | 2,400 320 at 400 kt |
| | | | | | | rdnance: 46/250-pound, 30/450 juipped for Harpoon, HARM, I | | | |
| 4 3 | Recognition-Atta capability for self- | ck Multisensor); 45 defense, and Harp | 5 had it by 1981, a oon. A-6F version | all were to have n desired by N | ve it by 1984. Synth Navy for production | E, carry 30,000 lb. fuel for trans etic aperture radar being develo in 1989 would have STOL cap 0 ft; combat radius: 600+ n.m. | oped for A-6E, which | will also get | a Sidewinder launch |

| Class, builder | Mission | Wingspan in m | Length in m | Height in m | Weight in kg | Engine | Max speed Mach/knots | Ceiling in feet | 1) Ferry range (nautical miles 2) Combat radius (nautical miles 3) Range (hours |
|--|---|---|---|---|--|---|---|---|---|
| A-7E Corsair II (Ling-Temco-Vought) | Attack | 11.80 | 14.06 | 4.90 | 17,278 (8,973 empty) | 1 Allison TF41-A-2 6,800-kg thrust | 553 kts (sea level) | 33,500 | 2,800 425 at 460 kt. 2.25 |
| | bombs; 4/Zuni Sidewinder AA REMARKS: A-7E is single-seat B&C | rockets; 28/2.75-inc M for defense. Have the only version in | h rockets; 1/Shr APQ-126 attack use on carriers; tting TF-41 engir | ike missile ar radar. APR- earlier A-7E nes in place o | tets, or missiles, and 1/Walleye guid 43 warning syst. with P&W TF30 | ccording to the mission and the ded bomb; 12/Snakeye bombs; (to be replaced by ALR-45F). D-P-408 engines are used by the FA-7C electronics aircraft are a | 2/Shrike missiles; 2/90° e Reserves. 81 TA-7C to | 7-kg bombs vo-seat tra | ons: 24/113-kg Mk 8 s. Normally carry tw iners converted from |
| AV-8C Harrier (McDonnell Douglas) | Attack (Marine Corps) | 7.70 | 13.87 | 3.43 | VTOL: 7,938 STOL: 10,109 | 1 Rolls-Royce Pegasus F402-RR-404A | 640 kts | 50,000 | 2,000 VTOL: 160; STOL: 500 |
| | Armament: 2/30-n | nm guns; bombs, roc | kets, etc. to a to | tal of 2,700 kg | | Sidewinder AAM for defense. | | | |
| | | | | | | s rate through accidents; only a eat warning systems. | about 45 left by end 1985 | . Surviving | AV-8A aircraft we |
| AV-8B Harrier (Mc Donnell Douglas) | Attack (Marine Corps) | 9.22 | 14.10 | 3.53 | VTOL: 8,720 STOL: 13,492 | 1 Rolls-Royce Pegasus F402-RR-406 9,751-kg thrust | 650 kts; 585 kts at sea level (Mach 0.91/0.86) | 50,000 | 2,460 VTOL: 100+ STOL: 300 |
| | REMARKS: Plan eig | | ns, 334 tot. aircr | raft (34 being | 2-seat TAV-8B); | 4/Maverick ASM. No radar. 33 were flying by mid-1985. F by 1-1-86. | irst AV-8B squadron ope | erational 6, | /85, with first of fou |
| S-3A Viking (Lockheed) | ASW | 20.93 | 16.26 | 6.94 | 23,853 (12,160 empty) | 2 G.E. TF34-GE-400 4,210-kg thrust each | Max: 450 kts Cruise: 350 kts Patrol: 210 kts | 40,000 | 3,000 1,150 9 |
| | Armament: 60/son anomaly detecto | | mbs; 4/Mk 57 de | epth charges; | 4/Mk 53 depth ch | narges or 4/Mk 53 mines or 4/N | Mk 46 torpedoes. APS-1 | 16 radar. A | SQ-81(V)1 magneti |
| | aircraft for India Will receive WS | ın Ocean deploymen | ts and one KS-3A or Improvement | serial refuele Program) wit | r. Some 140 of the h APS-137(V)1 s | m the sensors on board. Four-n e 160 S-3A survivors were to be ynthetic aperture radar, Harpo | updated to S-3B, at the r | ate of 3/mo | onth, beginning 4/87 |
| RF-8G Crusader (Ling-Temco-Vought) | Photo reconnaissance | 10.87 | 16.61 | 4.80 | 12,620 (7,619 empty) | 1 P&W J57-P420 8,165-kg thrust with afterburner (5,190 kg without) | 854 kts | 51,800 | 640 2 |
| | | -8G are retained as t quadrons. Carry AL | | | | aircraft owned by the Navy; al | l are very old, but have b | een refurb | ished. Flown only b |
| E-2C Hawkeye (Grumman) | Airborne early warning and air control | 24.58 | 17.56 | 5.59 | 23,810 (17,091 empty) | 1 Allison T56-A-425 turboprops, 4,591 shp each | 315 kts (270 kts, cruise) | 30,800 | 1,525 6 |
| | surface targets in | n a 250 n.m. radius | and control 25 s | simultaneous | intercepts; to be | in crew. By 1-1-86 a total of 76 improved by TRAC-A (Total T56-A-427 engines to be used. | Radiation Aperture Con | ntrol Anter | nna) radar to reduc |
| EA-6B Prowler (Grumman) | Electronics warfare | 16.15 | 18.11 | 4.95 | 27,392 (12,185 empty) | 2 P&W J52-P-408, 5,080-kg thrust each | 520 kts (410 kts, * cruise) | 34,400 | 2,400 710 |
| | Two-seat Naval I of ordnance; 27 v | Reserve and Marine | Corps Reserve Ea about 20 remain. | A-6A Intrude | s carry five ALQ- | F jammer rods beneath wings a 31B jammer pods and can alter d from the standard A-6E by a | natively be used as an att | ack aircraf | t, with up to 8,160 kg |
| A-3B Skywarrior (McDonnell Douglas) | Electronics warfare | 22.11 | 23.28 | 6.94 | 35,380 (18,685 empty) | 2 P&W J57-P-10 5,625-kg thrust each | 556 kts (400 kts, cruise) | 41,300 | 5,000 1,100 6 |
| | REMARKS: Badly ne transport. | ed replacement; nor | e planned. KA-3 | B is used by | Reserves for fligh | t refueling. RA-3B and ERA-3 | B are used for reconnais | sance, The | re is also one VA-3F |
| -3C Orion (Lockheed) | Maritime patrol and ASW | 30.37 (P-3C Update IV and P-3B: 31-13) | 35.61 | 10.28 | 62,994 (27,892 empty) | 4 Allison T56-A-14 turboprops, 4,910 hp each | 405 kts (209 kts patrol) | 34,000 | 4,500 2,380 patrol 14.5 |
| | of disposable ordr Harpoon stations | nance and sensors. A under FY 83 budge | PS-115 radar. As t. | SQ-81(v)1 ma | gnetic anomaly de | nobuoys, 4/Harpoon anti-ship etector (MAD), ASQ-114 digita | l computer, P-3C has AA | S-36 FLIR | gear. 63 to receive 4 |
| | with an A-NEW (MAD), APS-115 P-3C are expected | central operations n radar, electronics co d to last 28 years eac A. Also over 70 to d | nodule built arou ountermeasures o ch. Total built fo | nd the ASQ-1 carried, EP-31 r USN throug | 114 miniaturized B/E are for electro th 1985: 157 P-3A | e squadrons), 233 P-3C (19 squa computer and with an Air Tac omiss warfare, RP-3A/D are for a, 124 P-3B, 233 P-3C, 1 RP-3I Update III, with new sonobuo | tical Data System. ASQ research, and WP-3D pe 0, 2 WP-3D. Over 30 cor | -10 magnet rform weat werted to F | ic anomaly detector ther reconnaissance. P-3A/B/E. RP-3A, |

| Class, builder | Mission | Wingspan in m | Length in m | Height in m | Weight in kg | Engine | Max speed Mach/knots | Ceiling in feet | 1) Ferry range (nautical miles) 2) Combat radius (nautical miles) 3) Range (hours) | |
|--|--|---|---------------------------------------|---------------------------------------|-------------------------------------|--|---|------------------------------------|--|--|
| C-1A Trader (Grumman) | Carrier Onboard Delivery (COD) | 21.23 | 22.80 | 4.98 | 12,247 | 2 Wright R1820-82 piston; 1,525 hp each | 242 kts | 22,000 | 965 at 145 kts | |
| | | e advanced obsolesce : 1,589 kg. Some 40 (| | | | go version of out-of-service S-2 Tr | acker ASW aircraft. | 'wo-man c | ew plus 9 passengers | |
| C-2A Greyhound (Grumman) | Carrier Onboard Delivery (COD) | 24.57 | 17.27 | 4.85 | 24,668 (14,175 empty) | 2 Allison T56-A-8A turboshaft; 4,050 shp each | old: 296 kts new: 343 kts (257 kts, cruise) | 28,800 (33,800 new units) | 1,490 at 260 kt. | |
| | | | | | | d series remain, with 39 more deliv provision for aerial refueling. New | | | | |
| MV-22A Osprey (Boeing-Bell) | Troop- carrier/ SAR (Marines) | 14.17 (11.58 rotor dia.) | 17.32 | 6.14 (5.28 folded) | 24,943 (max.) | Allison 501-MBOC turboshaft; 6,000 shp each | 380 kts (cruise) | 32,000 | 1,200 range (1,814 kg cargo) 2,500 max. | |
| | | | | | | raft, Navy about 50 for SAR duties d 12.7-mm nose gun deleted. First | | | ,000 ft. Up to 4,535 kg | |
| HELICOPTERS: | | | | | | | | | Mission range (nautical miles) Ferry range | |
| Class, builder | Mission | Diameter (rotor) | Length (overall) | Height | Weight in kg | Engine | Max. speed in knots | Ceiling in feet | (nautical miles) 3) Endurance (hours) | |
| SH-3D, G, H Sea King (Sikorsky) | ASW | 18.9 | 22.16 (16.70, fuselage) | 5.13 | 9,300 (5,302 empty) | 2 G.E. T58-GE-10 turboshaft, 1,400 shp each | 144 118, cruise | 10,800 | 625 4.50 | |
| | | Mk 46 torpedoes, sor | organism and the second | | | | | | | |
| | AQS-13 dipping | g sonar. AQS-81(V)2 | MAD. SH-3G m | odels updating t | oSH-3H stand | uance-class DD. SH-3H is a multip ard, carry APS-24 radar. Planned t in service as of 1-1-84; 26 SH-3D w | o replace with SH-60F | Eleven U | SMC VH-3A/D serve | |
| SH-2F Sea Sprite LAMPS-I (Kaman) | ASW | 13.42 | 16.04 (11.69 fuselage) | 4.73 | 5,806 (3,154 empty) | 2 G.E. T58-GE-8F turboshaft, 1,350 hp each | 143 130, cruise | 22,500 | 445 2.50 | |
| | ARR-75 sonob REMARKS: Found | aoy dispenser fitted. on FF, DD, and CG ty | pes. 106 in servi | ce 1-1-86. Until | 1983, all were c | narkers. ASQ-81(V)2 MAD (Magr onversions of UH-2 Sea Sprite util irst new SH-2F delivered 12-8-83. 2 | ity helicopters. Reintr | oduced int | production, with 42 | |
| SH-60B Seahawk LAMPS-III (Sikorsky) | ASW | 16.36 | 19.76 (15.24, fuselage) | 5.23 | 9,435 | 2 G.E. T700-GE-401 turboshaft, 1,723 max. hp each (1,543 hp cont.) | 130 kts | *** | 150 | |
| | Armament: 25/sonobuoys; 2/Mk 46 ASW torpedoes. | | | | | | | | | |
| ,ai | Highly automat | ed; all sensors displa | y on ship which | controls the hel | icopter. 42 SH- | (V)2 MAD, 25 SSQ-53 DIFAR an 60F with ASQ-13F dipping sonars 85-86. Nine VH-60 in FY 86 for 1 | version sought to beg | in replacer | nent of carrier-based | |
| CH-46 HH-46A, D, E Sea Knight (Boeing Vertol) | Troop-carrying assault (Marine Corps) | 15.56 | 25.72 (13.67 fuselage) | 5.08 | 10,438 (5,947 empty) | 2 G.E. T58-GE-10 turboshaft, 1,450 shp each CH-46E: 2 G.E. T58-GE10, 1,870 shp each | 144 | 14,000 | 206 774 | |
| | replenishment s seats; all earlier | ships. Can carry 1,360 | kg of cargo inte ernized. Glass-re | rnally or 4,536 l inforced plastic | g in a sling ben rotors being su | bordinated and is usually assigned teath. CH-46E is updated (1977) ve abstituted and infrared jamming ed each in 1985. | ersion with automatic | navigation | system and armored | |
| CH-53 A, D, RH-53D Sea Stallion (Sikorsky) | Navy RH-53D: Minesweeping | 22.04 | 26.92 (20.48, fuselage) | 7.59 | 19,050 (10,718 empty) | 2 G.E. T 64-GE-413 turboshaft, 2,925 hp each | 170 150 cruise | 21,000 | 540 886 3.50 | |
| | Marine Corps CH-53A, D: Assault transport | | | | | | | | | |
| | version is equip arrays, Mk 105 l | ped for serial minesw | eeping and has a coustic sweep | r64-GE-415 eng array, SPU-1 sh | ines, 2/12.7-m allow-water sw | rith 4 hospital corpsmen or 4 tons o m machine guns, and points for too eep rig, and AQS-14 minehunting s an of 14 F-21A. | wing Mk 103 cutters, I | /lk 104 ma | metic minesweeping | |
| CH-53E Super Stallion MH-53E Sea Dragon (Sikorsky) | Troop-carrying assault (Marines) Heavy lift (Navy) | 24.08 | 30.20 (22.35, fuselage) | 8.44 | 31,638 (14,910 empty) | 3 G.E. T64-GE-416 turboshaft; 4,380 max. shp each (3,695 shp cont.) | 170 150 cruise | 18,500 | 230 with 8,630 kg; 50 with 14,500 kg cargo; 1,000 | |
| | prototype, delive 194 CH-53E/31 | ered 1983. First MH-5 | 3E requested un tion FY 86-89 n | der FY 84. Navy nostly MH-vers | use for CH-531 ion. MH-53 has | oladed main rotor. 35th CH-53E r E is for cargo, aircraft-recovery, and s enlarged side sponsons holding 4 | heavy lift. 85 CH-53E | delivered | y 1985. Plan total of | |

2

NAVAL AND MARINE CORPS AVIATION (continued)

Mission

(Marine Corps)

Assault

1) Mission range (nautical miles) 2) Ferry range (nautical miles) Weight Max. speed Ceiling 3) Endurance Height Engine in knots (hours) 4.39 4,763 2 Pratt & Whitney PT6 15,000 250 110 (2.517 turboshaft, 900

Armament: 2/7.62-mm machine guns and rockets.

Diameter

(rotor)

14.70

REMARKS: Can carry 16 troops. UH-1N replaced earlier UH-1E, which had 1 Lycoming T53 turboshaft of 1,100 shp. Navy uses UH-1E and TH-1L for utility and training duties.

shp each

AH-1J, T Sea Cobra 16.27 4,536 2 Pratt & Whitney T400 Attack (Bell) (Marine Corps) (13,60, 3,000 WV-402 turboshaft; fuselage) empty 1,970 hp each

Length

(overall)

fuselage)

17.47

(12.93)

Armament: 1/20-mm XM-197 gatling gun, plus 76/2.75-in rockets or 2/7.62-mm minigun, Hellfire and Sidearm missiles (AH-1T also: TOW anti-tank missiles).

empty)

REMARKS: AH-1W Super Cobra in production, 22 each authorized FY 85, FY 86: T-700 engine, 1,700 kg (vice 680 kg) payload, 120 kts at 6,349 kg gross with 8 Hellfire missiles. Plan update of all 46 remaining earlier AH-1T with same engines.

Also in service with Navy and Marine Corps aviation are 13 F-5E/F and 20 OA-4M aircraft for "Top Gun" training to simulate Soviet aircraft, about 20 OV-10A and 18 OV-10D twin-engine observation/attack aircraft for the Marines (all OV-10A converting to OV-10D under FY 83, with engine upgrade, laser designator), 27 C-9B transports (military DC-9) for the Marines and Naval Reserve, C-130 Hercules (in C-130, arcraft for the Mannes (all OV-10A converting to OV-10D under F Y 85, with eighte upgrade, laser designator), 27 C-98 transports (military DC-9) for the Mannes and Naval Reserve, C-130 Hercules (in C-130, LC-130 arctic, DC-130 drone control, and EC-130 TACAMO communications versions), C-131F, G, and H Samaritan transports, T-2C Buckeye jet trainers, T-34B/C student trainers, T-38A Talon jet test-pilot trainers, T-39D Sabreliner flight-officer trainers (and CT-39E/G light transport versions), T-44A Pegasus twin-engine trainers, and TH-57A helicopter trainers.

Two EC-130Q TACAMO aircraft delivered 1984 (with the USC-13(V) trailing wire communications system) were the last of their type, with production planned to switch to the E-6A (Boeing 707 variant), of which 14 are scheduled to fly by 1991. The E-6A will fly a 14 hour, Mach 0.75 mission to a range of about 6,000 n.m. The max. takeoff weight will be 155,102 kg.

The T-45 Goshawk (British Aviation Hawk variant) series of trainers from McDonnell Douglas was planned to include 54 T-45B land-only and 253 F-45A carrier-capable aircraft; first T-45B flight 1987, first

T-45A a year later. Congress canceled T-45B in late 1983. In the interim, 15 stored T-2B Buckeye jet trainers were reactivated in 1982.

Fifteen Cessna Citation II corporate jets were leased 5-83 as the T-47A for flight-officer navigational training, with initial deliveries late in 1984; Emerson APQ-159 radar added. For adversary training, Congress authorized 4 new aircraft in FY 84, 8 in FY 85, and 12 in FY 86; these will be a stripped version of the Air Force Fighting Falcon, as the F-16N. As an interim measure, 12 Israeli early model Kfir fighters were leased for 3 years as F-21As, arriving beginning in 4-85; a second squadron of 13 to be leased 1986 for Marine adversary training.



T-34C Mentor trainer

Class, builder

(Bell)

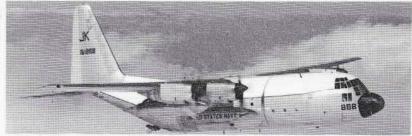
UH-1E/N Iroquois

Beech Aircraft



T-44A King Air trainer

Beech Aircraft



EC-130G Hercules TACAMO communications aircraft

PH2 W. Harvey, USN, 1977



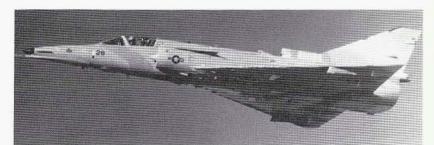
T-2C Buckeye advanced trainer

PHCS L. Ramage, USN, 8-78



CH-53E Super Stallion

W. Donko, 7-85



F-21A Kfir adversary trainer

U.S. Navy, 10-85



C-9B Skytrain II transport

McDonnell Douglas, 1973

Bldr: General Dynamics,

NUCLEAR-POWERED BALLISTIC-MISSILE SUBMARINES

♦ 7 (+6+5+...) Ohio class (SCB 304 design)

| Groton, Conn. (SSBN 726-73 | | acoign/ | Dian ordered | - Dynamico, |
|--|---------|-----------|--------------|-------------|
| | Program | Laid down | L | In serv. |
| SSBN 726 Ohio | FY 74 | 10-4-76 | 7-4-79 | 11-11-81 |
| SSBN 727 MICHIGAN | FY 75 | 4-4-77 | 26-4-80 | 11-9-82 |
| SSBN 728 FLORIDA | FY 75 | 9-6-77 | 14-11-81 | 8-6-83 |
| SSBN 729 GEORGIA | FY 76 | 7-4-79 | 6-11-82 | 11-2-84 |
| SSBN 730 HENRY M. JACKSON (ex-Rhode Island) | FY 77 | 19-1-81 | 15-10-83 | 6-10-84 |
| SSBN 731 ALABAMA | FY 78 | 27-8-81 | 19-5-84 | 25-5-85 |
| SSBN 732 Alaska | FY 78 | 9-3-83 | 12-1-85 | 25-1-86 |
| SSBN 733 NEVADA | FY 80 | 8-8-83 | 14-9-85 | 10-86 |
| SSBN 734 N | FY 81 | | 11-86 | 12-88 |
| SSBN 735 N | FY 83 | | 1987 | 8-89 |
| SSBN 736 N | FY 84 | | 1988 | 1990 |
| SSBN 737 N | FY 85 | | | 1-91 |
| SSBN 738 N | FY 86 | | | 12-91 |
| SSBN 739 N | FY 87 | | | 12-92 |
| SSBN 740 N | FY 88 | | | 12-93 |
| SSBN 741 N | FY 89 | | | 12-94 |
| SSBN 742 N | FY 90 | | | 12-95 |

D: 16,764/18,750 tons S: 20+ kts (sub.) Dim: 170.69 \times 12.80 \times 11.13 (surf.) A: 24/Trident-C-4 missiles - 4/533-mm Mk 68 TT

Electron Equipt: Radar: BPS-15A-EW: WLR-8(V)

Sonar: BQQ-6, BQS-13, BQS-15, BQR-15, BQR-19

M: 1 G.E. S8G natural circulation pressurized-water reactor; turboeduction drive;

1 prop; 60,000 hp

Endurance: 70 days Man: 15 officers, 145 men (2 crews)

REMARKS: SSBN 726 ran first trials 17-6-81 and was delivered 3 years late. Program now on schedule. The availability of this class as a whole is to be 66 percent, using a planned schedule of 70-day patrols, followed by 25-day refit periods, and with a 12-month overhaul every nine years. Each ship has two crews. None ordered under FY 79 because of program delays and cost overruns. Ordering of SSBN 734 was deferred

to 7-1-82 due to contract disputes between the Navy and General Dynamics.

Able to submerge to 300 meters. Carry two Mk 2 SINS (Ship's Inertial Navigational System) and have navigational satellite receivers. Mk 98 digital computer missilefire-control system and Mk 118 torpedo-fire-control system are installed. SSBN 734 and later will have Trident D-5 as built. All have 1 Kollmorgen Type 152 and 1 Type 82 periscopes.

SSBN 726 made her first operational deployment 1-10-82 to 10-12-82, having fired her first missile on 17-1-82. The first eight will be based at Bangor, Washington; later units are to base at King's Bar, Georgia. SSBN 732 began sea trials 18-9-85.



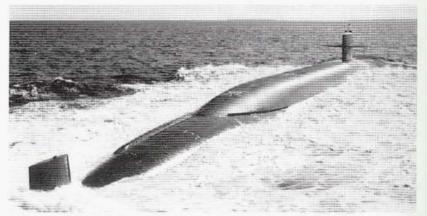
Michigan (SSBN 727)

Gen. Dynamics, 9-82



Florida (SSBN 728)

Gen. Dynamics, 6-83



Alabama (SSBN 731)

Gen. Dynamics, 5-85



Henry M. Jackson (SSBN 730)

Gen. Dynamics, 10-84

NUCLEAR-POWERED BALLISTIC-MISSILE SUBMARINES (continued)

* 30 Lafayette class (SCB 216 and SCB 216A types)

| | Bldr | Laid down | L | In |
|--|--------------------------------|--------------|----------|------------------|
| SSBN 616 LAFAYETTE | | 17-1-61 | 8-5-62 | serv. 23-4-63 |
| SSBN 616 LAFAYETTE SSBN 617 ALEXANDER HAMILTON | Gen. Dynamics Gen. Dynamics | 26-6-61 | 18-8-62 | 27-6-63 |
| SSBN 617 ALEXANDER HAMILTON SSBN 619 ANDREW JACKSON | Mare Island NSY | 26-4-61 | 15-9-62 | 3-7-63 |
| SSBN 620 John Adams | Portsmouth, NSY | 19-5-61 | 12-1-63 | 12-5-64 |
| SSBN 620 John Adams SSBN 622 James Monroe | Newport News | 31-7-61 | 4-8-62 | 7-12-63 |
| SSBN 622 JAMES MONROE SSBN 623 NATHAN HALE | Gen. Dynamics | 2-10-61 | 12-1-63 | 23-11-63 |
| SSBN 623 NATHAN HALE SSBN 624 Woodrow Wilson | Mare Island NSY | 13-9-61 | 22-2-63 | 27-12-63 |
| | | | | |
| SSBN 625 HENRY CLAY | Newport News | 23-10-61 | 30-11-62 | 20-2-64 |
| SSBN 626 DANIEL WEBSTER | Gen. Dynamics | 23-12-61 | 27-4-63 | 9-4-64 |
| SSBN 627 James Madison* | Newport News | 5-3-62 | 15-3-63 | 28-7-64 |
| SSBN 628 TECUMSEH | Gen. Dynamics | 1-6-62 | 22-6-63 | 29-5-64 |
| SSBN 629 DANIEL BOONE* | Mare Island NSY | 6-2-62 | 22-6-63 | 23-4-64 |
| SSBN 630 John C. Calhoun* | Newport News | 4-6-62 | 22-6-63 | 15-9-64 |
| SSBN 631 Ulysses S. Grant | Gen. Dynamics | 18-8-62 | 2-11-63 | 17-7-64 |
| SSBN 632 Von Steuben* | Newport News | 4-9-62 | 18-10-63 | 30-9-64 |
| SSBN 633 Casimir Pulaski* | Gen. Dynamics | 12-1-63 | 1-2-64 | 14-8-64 |
| SSBN 634 STONEWALL JACKSON* | Mare Island NSY | 4-7-62 | 30-11-63 | 26-8-64 |
| SSBN 636 NATHANAEL GREENE | Portsmouth NSY | 21-5-62 | 12-5-64 | 19-12-64 |
| SSBN 640 Benjamin Franklin* | Gen. Dynamics | 25-5-63 | 5-12-64 | 22-10-65 |
| SSBN 641 SIMON BOLIVAR* | Newport News | 17-4-63 | 22-8-64 | 29-10-65 |
| SSBN 642 Kamehameha | Mare Island NSY | 2-5-63 | 16-1-65 | 10-12-65 |
| SSBN 643 George Bancroft* | Gen. Dynamics | 24-8-63 | 20-3-65 | 22-1-66 |
| SSBN 644 LEWIS AND CLARK | Newport News | 29-7-63 | 21-11-64 | 22-12-65 |
| SSBN 645 James K. Polk | Gen. Dynamics | 23-11-63 | 22-5-65 | 16-4-66 |
| SSBN 654 George C. Marshall | Newport News | 2-3-64 | 21-5-65 | 29-4-66 |
| SSBN 655 HENRY L. STIMSON* | Gen. Dynamics | 4-4-64 | 13-11-65 | 20-8-66 |
| SSBN 656 George Washington Carver | Newport News | 24-8-64 | 14-8-65 | 15-6-66 |
| SSBN 657 Francis Scott Key* | Gen. Dynamics | 5-12-64 | 23-4-66 | 3-12-66 |
| SSBN 658 MARIANO G. VALLEJO* | Mare Island NSY | 7-7-64 | 23-10-65 | 16-12-66 |
| SSBN 659 WILL ROGERS | Gen. Dynamics | 20-3-65 | 21-7-66 | 1-4-67 |

Authorized: SSBN 616 to SSBN 626 in FY 61, SBN 627 to SSBN 636 in FY 62, SSBN 640 to SSBN 645 in FY 63, and SSBN 654 to SSBN 659 in FY 64

D: 7,350/8,250 tons S: 15/25 kts Dim: 129.54 \times 10.05 \times 9.0 A: 16/Poseidon or Trident-1 missiles -4/533-mm TT (fwd)

Electron Equipt: Radar: BPS-11A or BPS-15

Sonar: BQR-7, BQR-15, BQR-19, BQR-21, BQS-4

M: 1 Westinghouse SW5 pressurized-water reactor; 1/7-bladed prop; 15,000 hp Endurance: 68 days Man: 13-14 officers, 129-133 men

Remarks: The 12 units marked with an asterisk received Trident-1 missiles by 12-82. SSBN 640 and following units have quieter propulsion machinery and are officially designated the *Benjamin Franklin* class. Three Mk 2 SINS were installed during conversion. Submersion depth for all is more than 300 meters. Mk 88 missile-fire-



Andrew Jackson (SSBN 619)

P. Voss, 3-83



George Bancroft (SSBN 643)

G. Arra, 1984



Woodrow Wilson (SSBN 624)

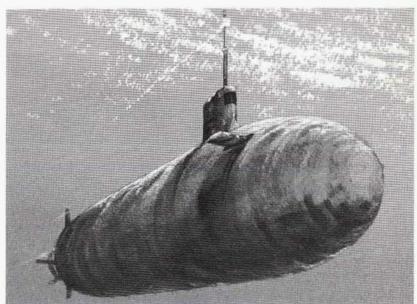
G. Arra, 8-85

control system and Mk 113 torpedo-fire-control system fitted. Conversion of both classes from Polaris A-3 to Poseidon missiles was completed between 1970 and 1977. Funds were requested each year thereafter through FY 82. SSBN 657 commenced the first Trident-1 operational patrol on 20-10-79. All Trident-1 (C-4) units are to be home-ported at King's Bay, Georgia, and all ships in both classes belong to the Atlantic Fleet. They operate on a schedule of 68-day patrols, followed by 32-day refit periods; every six years a 16-month yard period is requested, giving an overall force availability of 55 percent. Each ship has two crews. SSBN 641 and two others are now on a nine-year operational/overhaul cycle. Sam Rayburn (SSBN 635) began deactivation of her missile system 16-9-85, preparatory to striking 9-86; she is to be converted to an immobile engineering training craft. Andrew Jackson (SSBN 619) and Nathan Hale (SSBN 623) are to be deactivated about 5-86 as SALT II compensation when Nevada (SSBN 733) begins sea trials.

NUCLEAR-POWERED ATTACK SUBMARINES

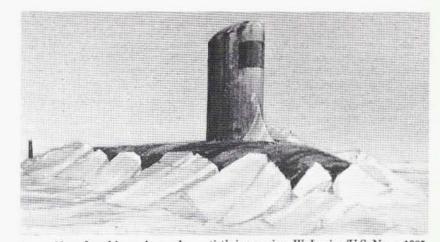
♦ 0 (+0+1+...) Seawolf ("SSN 21") class

Bldr Laid down L In serv.
SSN. . Seawolf 1995



Seawolf submerged - artist's rendering

W. Lupien/U.S. Navy, 1985



Seawolf surfaced in an icepack — artist's impression W. Lupien/U.S. Navy, 1985

D: 9,150 tons (sub.) S: 35 kts (sub.) Dim: 99.37 × 12.19 × 10.94 A: 8/TT (fwd: SOW, Tomahawk, Harpoon missiles, Mk 48 torpedoes, mines) Electron Equipt: Radar: . . .

Sonar: SUBACS suite, Wide-aperture passive array M: 1 pressurized-water reactor, . . . drive; 1 prop; 60,000 hp Man: Approx. 15 officers, 134 enlisted

Remarks: First unit to be requested under FY 89. General Dynamics and Newport
News SB & DD competing for initial unit design. Will offer significant improvements
in speed, quietness, weapons load, sonar processing, etc. over Los Angeles class, to
continue U.S. lead over Soviet submarine technology.

Submarine will have smaller length-to-beam ratio to improve maneuverability. Retractable bow planes and six stern fins will be carried. A small wedge at the base of the forward edge of the sail will improve hydrodynamic flow. Propeller will be of pump-jet design.

♦ 33 (+19+6) Los Angeles class (SCB 303 type)

| | V 33 (+13 + 0) Los Angeles | ciass (SCD 505 | type, | | |
|---|----------------------------|----------------|-----------|----------|----------|
| | | Bldr | Laid down | L | In serv. |
| | SSN 688 Los Angeles | Newport News | 8-1-72 | 6-4-74 | 13-11-76 |
| | SSN 689 BATON ROUGE | Newport News | 18-11-72 | 18-4-75 | 25-6-77 |
| | SSN 690 PHILADELPHIA | Gen. Dynamics | 12-8-72 | 19-10-74 | 25-6-77 |
| | SSN 691 Memphis | Newport News | 23-6-73 | 3-4-76 | 17-12-77 |
| | SSN 692 OMAHA | Gen. Dynamics | 27-1-73 | 21-2-76 | 11-3-78 |
| | SSN 693 CINCINNATI | Newport News | 6-4-74 | 19-2-76 | 10-6-78 |
| | SSN 694 GROTON | Gen. Dynamics | 3-8-73 | 9-10-76 | 8-7-78 |
| | SSN 695 BIRMINGHAM | Newport News | 26-4-75 | 15-10-77 | 20-12-78 |
| | SSN 696 New York City | Gen. Dynamics | 15-12-73 | 18-6-77 | 10-3-79 |
| | SSN 697 Indianapolis | Gen. Dynamics | 19-10-74 | 30-7-77 | 5-1-80 |
| | SSN 698 Bremerton | Gen. Dynamics | 8-5-76 | 22-7-78 | 28-3-81 |
| | SSN 699 Jacksonville | Gen. Dynamics | 21-2-76 | 18-11-78 | 16-5-81 |
| | SSN 700 DALLAS | Gen. Dynamics | 9-10-76 | 28-4-79 | 18-7-81 |
| | SSN 701 La Jolla | Gen. Dynamics | 16-10-76 | 11-8-79 | 24-10-81 |
| | SSN 702 Phoenix | Gen. Dynamics | 30-7-77 | 18-12-79 | 19-12-81 |
| | SSN 703 Boston | Gen. Dynamics | 11-8-78 | 19-4-80 | 30-1-82 |
| ł | SSN 704 BALTIMORE | Gen. Dynamics | 21-5-79 | 18-12-80 | 24-7-82 |
| | SSN 705 CITY OF CORPUS | Gen. Dynamics | 4-9-79 | 25-4-81 | 8-1-83 |
| | CHRISTI | | | | |
| | SSN 706 ALBUQUERQUE | Gen. Dynamics | 27-12-79 | 13-3-82 | 21-5-83 |
| | SSN 707 Portsmouth | Gen. Dynamics | 8-5-80 | 18-9-82 | 1-10-83 |
| | SSN 708 MINNEAPOLIS-SAINT | Gen. Dynamics | 20-1-81 | 19-3-83 | 10-3-84 |
| | PAUL | | | | |
| | SSN 709 HYMAN G. RICKOVER | Gen. Dynamics | 23-7-81 | 27-8-83 | 21-7-84 |
| | SSN 710 Augusta | Gen. Dynamics | 1-4-82 | 21-1-84 | 19-1-85 |
| | SSN 711 SAN FRANCISCO | Newport News | 26-5-77 | 27-10-79 | 24-4-81 |
| | SSN 712 ATLANTA | Newport News | 17-8-78 | 16-8-80 | 6-3-82 |
| | SSN 713 Houston | Newport News | 29-1-79 | 21-3-81 | 25-9-82 |
| | SSN 714 NORFOLK | Newport News | 1-8-79 | 31-10-81 | 21-5-83 |
| | SSN 715 BUFFALO | Newport News | 25-1-80 | 8-5-82 | 5-11-83 |
| | SSN 716 SALT LAKE CITY | Newport News | 26-8-80 | 16-10-82 | 12-5-84 |
| | SSN 717 OLYMPIA | Newport News | 31-3-81 | 30-4-83 | 17-11-84 |
| | SSN 718 HONOLULU | Newport News | 10-11-81 | 24-9-83 | 6-7-85 |
| | SSN 719 PROVIDENCE | Gen. Dynamics | 30-9-82 | 4-8-84 | 27-7-85 |
| | SSN 720 PITTSBURGH | Gen. Dynamics | 9-4-83 | 8-12-84 | 23-11-85 |
| | SSN 721 CHICAGO | Newport News | 5-1-83 | 13-10-84 | 8-86 |
| | SSN 722 KEY WEST | Newport News | 6-7-83 | 20-7-85 | 1-87 |
| | SSN 723 OKLAHOMA CITY | Newport News | 4-1-84 | 2-11-85 | 3-87 |
| | SSN 724 LOUISVILLE | Gen. Dynamics | 24-9-84 | 14-12-85 | 1987 |
| | SSN 725 HELENA | Gen. Dynamics | 28-3-85 | 28-6-86 | 1987 |
| | SSN 750 NEWPORT NEWS | Newport News | 3-3-84 | 29-3-86 | 1987 |
| | SSN 751 SAN JUAN | Gen. Dynamics | 3-8-85 | 11-86 | 1987 |
| | SSN 752 Springfield | Gen. Dynamics | 12-85 | 3-87 | 1988 |
| | SSN 753 N | Newport News | 22-4-85 | 3-87 | 5-88 |
| | SSN 754 N | Gen. Dynamics | 4-86 | 7-87 | 7-88 |
| | SSN 755 N | Gen. Dynamics | 9-86 | 12-87 | 12-88 |
| | SSN 756 N | Newport News | 4-86 | 1.4.4 | 6-89 |
| | SSN 757 N | Gen. Dynamics | 3-87 | | 7-89 |
| | SSN 758 N | Newport News | 9-86 | | 1989 |
| | SSN 759 N | Newport News | 1-87 | | 1990 |
| | SSN 760 N | | | | 1990 |
| | SSN 761 N | | | | 1990 |
| | SSN 762 N | | | | 1990 |
| | SSN 763 N | | | 2.2 | 1990 |
| | SSN 764 N | 200 | 100 | 100 | |
| | SSN 765 N | | | | |
| | SSN 766 N | | | | |
| | SSN 768 N | | | | |
| | SSN 769 N | | | | 3.63 |
| | SSN 770 N | | | | |
| | | 10 0 0 | 1000 | 45.00 | 36 80/12 |

Authorized: SSN 688 to SSN 690 in FY 70, SSN 691 to SSN 694 in FY 71, SSN 695 to SSN 700 in FY 72, SSN 701 to SSN 705 in FY 73, SSN 706 to SSN 710 in FY 74, SSN 711 to SSN 713 in FY 75, SSN 714 to SSN 715 in FY 76, SSN 716 to SSN 718 in FY 77, SSN 719 in FY 78, SSN 720 in FY 79, SSN 721 to SSN 722 in FY 80, SSN 723 to SSN 724 in FY 81, SSN 725 and 750 in FY 82, SSN 751 to SSN 752 in FY 83, SSN 753 to SSN 755 in

FY 84, SSN 756 to SSN 759 in FY 85, SSN 760 to SSN 763 in FY 86. Requested: SSN 764 to SSN 767 in FY 87. Planned: 3 in FY 88, FY 89, 4 in FY 90, 1 in FY 91.

D: 6,080/6,927 tons S: 30+ kts. (sub.) Dim: 109.73 × 10.06 × 9.75

A: SSN 719 and later: 12/vertical tubes for Tomahawk — all: 4/533-mm TT Mk 67 (amidships) for Tomahawk, Harpoon, Mk 48 torpedoes, mines, etc. (22 reloads)

Electron Equipt: Radar: 1/BPS-15A

EW: BRD-7 direction finder, WLR-8(V)2, WLR-12 Sonar: 1/BQQ-5A(V)1, BQS-15, BQR-15 (SSN 751: SUBACS)



Salt Lake City (SSN 716)

U.S. Navy, 5-84



Indianapolis (SSN 697) — note BQR-15 towed array fairing down starboard side ABPH M. Russell, R.A.N., 1-85



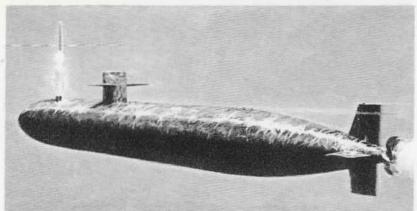
Hyman G. Rickover (SSN 709) - on trials

Gen. Dynamics, 4-84



Groton (SSN 694)

L. & L. Van Ginderen, 9-85



Providence (SSN 719) - with vertical-launch Tomahawk - artist's rendering Gen. Dynamics, 1983

M: G.E. S6G reactor, 2 GT; 1/7-bladed prop; 35,000 hp Man: 12 officers, 115 men

Remarks: SSN 719 and later are receiving twelve vertical-launch tubes for Tomahawk cruise missiles, located between the forward end of the pressure hull and the spherical array for the BQQ-5 bow sonar; SSN 751 and later will have bow-mounted vice sail-mounted diving planes and will have the first-generation SUBACS (Submarine Advanced Combat System) integrated sonar/weapons-control suit from I.B.M. All carry a UYK-7 general-purpose computer and have WSC-3 satellite comms. gear. One Mk 2 optical and one Sperry Mk 18 multi-function periscope fitted. Mk 113 Mod. 10 torpedo-fire-control in SSN 688 to SSN 699, Mk 117 in later units to be backfitted in all. Under FY 83, the Mk 117 f.c.s. is being modified to permit launching SUBROC missiles. Will carry ASW SOW when available in the early 1990s. Harpoon began to be carried in 1978. SSN 688-720 will carry 8 Tomahawk cruise missiles, later units will have 20. Maximum diving depth is 450 m. Described as the finest ASW platforms now afloat. Bow is of fiberglass as a streamlined cover over the spherical BQQ-5-A(V)1 sonar array. There are two SINS, to be replaced by the ESGN (Electrically Suspended Gyro Navigator). All have one Fairbanks-Morse 38D8% diesel generator set and batteries for emergency propulsion. The BLD-1 electromagnetic interferometer is being added, beginning 1985. The reactor core is expected to last 10-13 years between refuelings. SSN 694 traveled around the world submerged 4-4-80 to 8-10-80. SSN 701 was the first of the class to be equipped to launch Tomahawk missiles from the torpedo tubes, in 1983; SSN 712 first operational sub with Tomahawk, 30-11-83.

1 Glenard P. Lipscomb class

Bldr Laid down In serv. SSN 685 GLENARD P. LIPSCOMB Gen. Dynamics 21-12-74 5-6-71 Authorized: FY 68



Glenard P. Lipscomb (SSN 685)

G. Gyssels, 11-85

D: 5,813 standard/6,480 tons (sub.) S: 25 kts Dim: 111.3 × 9.7 × 8.8

A: 4/533-mm TT (amidships) Man: 14 officers, 98 men Electron Equipt: Radar: BPS-15 — Sonar: BQQ-5, BQS-14

M: 1 Westinghouse S5WA, natural circulation reactor, G.E. turboelectric drive; 1 prop; . . . hp

Remarks: This TEDS (Turbo-Electric Drive Submarine) was an effort to make an exceptionally quiet submarine at the expense of some speed. Most other equipment is similar to the Sturgeon class. During 3-81 to 7-82 overhaul, was equipped to launch Harpoon, with BQQ-5 vice BQQ-2 sonar, and Mk 117 torpedo-fire-control vice Mk 113 Mod. 8; problems with the turbogenerator system kept the ship in the yard into early 1985. Will carry up to 8 Tomahawk cruise missiles.

* 37 Sturgeon class (SCB 188A and SCB 188M types)

| down L in serv. |
|------------------------|
| 8-63 26-2-66 3-3-67 |
| 5-64 14-10-66 12-10-68 |
| 1-64 15-4-67 17-8-68 |
| 5-64 22-6-67 11-10-69 |
| - |

| SSN 647 Pogy | New York SB | 4 5 04 | 0.0.00 | 15 5 51 |
|--|------------------------------|---------------------|-------------------|---------------|
| SSN 647 POGY SSN 648 Aspro | | 4-5-64 | 3-6-67 | 15-5-71 |
| SSN 648 ASPRO SSN 649 SUNFISH | Ingalls SB | 23-11-64 | 29-11-67 | 20-2-69 |
| SSN 649 SUNFISH SSN 650 PARGO | Gen. Dynamics | 15-1-65 | 14-10-66 | 15-3-69 |
| | Gen. Dynamics | 3-6-64 | 17-9-66 | 1-5-68 |
| SSN 651 QUEENFISH | Newport News | 11-5-64 | 25-2-66 | 6-12-66 |
| SSN 652 PUFFER | Ingalls SB | 8-2-65 | 30-3-68 | 9-8-69 |
| SSN 653 RAY | Newport News | 1-4-65 | 21-6-66 | 12-4-67 |
| SSN 660 SANDLANCE | Portsmouth NSY | 15-1-65 | 11-11-69 | 25-9-71 |
| SSN 661 LAPON | Newport News | 26-7-65 | 16-12-66 | 14-12-67 |
| SSN 662 GURNARD | Mare Island NSY | 22-12-64 | 20-5-67 | 6-12-68 |
| SSN 663 HAMMERHEAD | Newport News | 29-11-65 | 14-4-67 | 28-6-68 |
| SSN 664 SEA DEVIL | Newport News | 12-4-66 | 5-10-67 | 30-1-69 |
| SSN 665 Guitarro | Mare Island NSY | 9-12-65 | 27-7-68 | 9-9-72 |
| SSN 666 HAWKBILL | Mare Island NSY | 12-9-66 | 12-4-69 | 4-2-71 |
| SSN 667 BERGALL | Gen. Dynamics | 16-4-66 | 17-2-69 | 13-3-69 |
| SSN 668 Spadefish | Newport News | 21-12-66 | 15-5-68 | 14-8-69 |
| SSN 669 Seahorse | Gen. Dynamics | 13-8-66 | 15-6-68 | 19-9-69 |
| SSN 670 FINBACK | Newport News | 26-6-67 | 7-12-68 | 4-2-70 |
| SSN 672 PINTADO | Mare Island NSY | 27-10-67 | 16-8-69 | 11-9-71 |
| SSN 673 Flying Fish | Gen. Dynamics | 30-6-67 | 17-5-69 | 29-4-70 |
| SSN 674 TREPANG | Gen. Dynamics | 28-10-67 | 27-9-69 | 14-8-70 |
| SSN 675 Bluefish | Gen. Dynamics | 13-3-68 | 10-1-70 | 8-1-71 |
| SSN 676 BILLFISH | Gen. Dynamics | 20-9-68 | 1-5-70 | 12-3-71 |
| SSN 677 Drum | Mare Island NSY | 20-8-68 | 23-5-70 | 15-4-72 |
| SSN 678 Archerfish | Gen. Dynamics | 19-6-69 | 16-1-71 | 24-12-71 |
| SSN 679 SILVERSIDES | Gen. Dynamics | 13-12-69 | 4-6-71 | 5-5-72 |
| SSN 680 WILLIAM H. BATES (ex-Redfish) | Ingalls SB | 4-8-69 | 12-71 | 5-5-73 |
| SSN 681 BATFISH | Gen. Dynamics | 9-2-70 | 9-10-71 | 1-9-72 |
| SSN 682 Tunny | Ingalls SB | 22-5-70 | 10-6-72 | 26-1-74 |
| SSN 683 PARCHE | Ingalls SB | 10-12-70 | 12-72 | 17-8-74 |
| SSN 684 CAVALLA | Gen. Dynamics | 4-6-70 | 19-2-72 | 9-2-73 |
| SSN 686 MENDEL RIVERS | | 26-6-71 | 2-6-73 | 1-2-75 |
| SSN 687 RICHARD B. RUSSELL | Newport News | 19-10-71 | 12-1-74 | 16-8-75 |
| SSN 686 MENDEL RIVERS | Newport News Newport News | 26-6-71 19-10-71 | 2-6-73 12-1-74 | 1-2- 16-8- |

Authorized: SSN 637 to SSN 639 in FY 62, SSN 646 to SSN 653 in FY 63, SSN 660 to SSN 664 in FY 64, SSN 665 to SSN 670 in FY 65, SSN 672 to SSN 677 in FY 66, SSN 678 to SSN 682 in FY 67, SSN 683 and SSN 684 in FY 68, SSN 686 and SSN 687 in FY 69

D: 4,250/4,780 tons (SSN 678 and later, plus modernized units: 4,460/4,960)

S: 15/30 kts Man: 12 officers, 95 men

Dim: 89.0 (SSN 678 and later and 19 refitted units: 92.1) \times 9.65 \times 8.8 A: 4/533-mm TT (amidships for 15 Mk 48 torpedoes, 4/Harpoon, and 4/SUBROC—up to 8 Tomahawk in lieu of other weapons)

Electron Equipt: Radar: 1/BPS-14 or 15 - EW: WLR-4 intercept



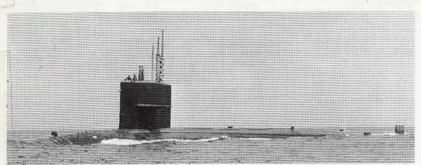
William H. Bates (SSN 680) with DSRV Avalon

G. Arra, 1985



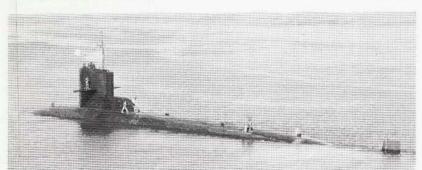
Puffer (SSN 652)

LSPH E. Pitman, R.A.N., 1985



Pintado (SSN 672) — note fairing running the length of the hull on the port side for housing the towed sonar array

G. Arra, 12-84



Silversides (SSN 679) — with aftward sail extension L. & L. Van Ginderen, 5-84

Sonar: BQQ-2 (with BQS-6 active/BQR-7 passive) or BQQ-5, BQS-8, SSN 637 to SSN 664: BQS-12; others: BQS-13 M: 1 Westinghouse S5W2 pressurized-water reactor, 2 G.E. or de Laval GT; 1 prop; 20,000 hp

REMARKS: The construction contract of SSN 647 with New York Shipbuilding, Camden, N.J., was canceled in 4-67, and completion of the ship was given to Ingalls, Pascagoula, Miss. Completion of SSN 665 was delayed twenty-eight months after ship sank while fitting out. The Mk 113 torpedo-fire-control system is being replaced by Mk 117 to permit Harpoon launching. SSN 678 and later units (SCB 188M) were lengthened to permit installation of BQQ-5 sonar suit. Diving planes are 11.6 wide. Maximum depth is about 400 m. The 70-megawatt S5W reactor plant operates at 160 kg/cm2, has two primary steam loops and two steam generators to supply steam to the two steam turbines. Original core life was 5,000 hours. SSN 666, SSN 672, and others have been modified to carry a DSRV (salvage submarine), which can be launched and recovered while submerged. The after hatch is so constructed that people can be transferred between the two ships while submerged. Since 1978, SSN 679 and 687 have an aftward extension to the lower portion of the sail to accommodate a towed communications array. Class expected to serve 30 years each. SSN 665 conducted the initial Tomahawk missile trials. SSN 680 has a low, forward extension to the sail. SSN 684 has been equipped to carry a cylindrical device associated with swimmers. Will be receiving ESGN (Electronically Suspended Gyro Navigator) in lieu of SINS.

• 1 Narwhal class (SCB 245)

Authorized: FY 64

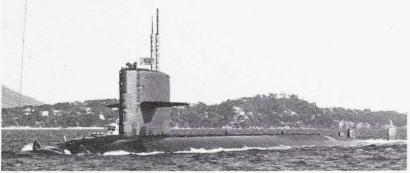
D: 5,284/5,830 tons S: 20/25 kts Dim: 96.0 × 11.5 × 7.9

A: 4/533-mm TT (amidships, for Mk 48 torp., Harpoon, up to 8 Tomahawk) Electron Equipt: Radar: BPS-14—EW: WLR-8

Sonar: BQQ-5 BQS-8

M: 1 G.E. S5G reactor, 2 GT; 1 prop; 17,000 hp Man: 12 officers, 108 men

Remarks: Prototype seagoing reactor designed to study the cooling of the S5G reactor by natural circulation, thus eliminating circulation pumps and their noise. In most



Narwhal (SSN 671)

J.-C. Bellonne, 1-83



Narwhal (SSN 671)

G. Arra, 1982

other respects, essentially a lengthened Sturgeon. Original BQQ-2 sonar suit and Mk 113 Mod. 6 fire-control system replaced by Mk 117 f.c.s. and BQQ-5.

13 Permit class (SSN 594 to SSN 612 and SSN 621 are SCB 188 type, SN 613 to SSN 615 are SCB 188M type)

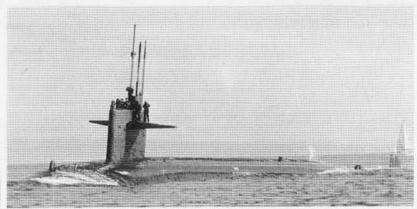
| | Bldr | Laid down | L | In serv. |
|---------------------------|-----------------|-----------|---------|----------|
| SSN 594 Permit | Mare Island NSY | 16-7-59 | 1-7-61 | 29-5-62 |
| SSN 595 Plunger | Mare Island NSY | 2-3-60 | 9-12-61 | 21-11-62 |
| SSN 596 BARB (ex-Pollack) | Ingalls SB | 9-11-59 | 12-2-62 | 24-8-63 |
| SSN 603 POLLACK (ex-Barb) | New York SB | 14-3-60 | 17-3-62 | 26-5-64 |
| SSN 604 HADDO | New York SB | 9-9-60 | 18-8-62 | 16-12-64 |
| SSN 605 Jack | Portsmouth NSY | 16-9-60 | 24-4-63 | 31-3-67 |
| SSN 606 TINOSA | Portsmouth, NSY | 24-11-59 | 9-12-61 | 17-10-64 |
| SSN 607 DACE | Ingalls SB | 6-6-60 | 18-8-62 | 4-4-64 |
| SSN 612 Guardfish | New York SB | 28-2-61 | 15-5-65 | 20-12-66 |
| SSN 613 Flasher | Gen. Dynamics | 14-4-61 | 22-6-63 | 22-7-66 |
| SSN 614 GREENLING | Gen. Dynamics | 15-8-61 | 4-4-64 | 3-11-67 |
| SSN 615 GATO | Gen. Dynamics | 15-12-61 | 14-5-64 | 25-1-68 |
| SSN 621 HADDOCK | Ingalls SB | 24-4-61 | 21-5-66 | 22-12-67 |

Authorized: SSN 594 to SSN 596 in FY 58, SSN 603 to SSN 607 in FY 59, SSN 612 to SSN 615 in FY 60, SSN 621 in FY 61



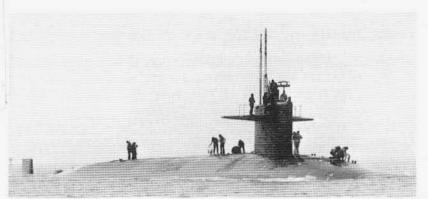
Barb (SSN 596)

G. Arra, 12-84



Guardfish (SSN 612) - note towed array fairing down port side of hull

G. Arra, 1983



Pollack (SSN 603)

G. Arra, 1983

SSN 594 to SSN 604, SSN 606 to SSN 612, and SSN 621:

D: 3,780/4,465 tons **Dim:** $84.88 \times 9.65 \times 8.80$

SSN 605:

D: 4,000/4,467 tons **Dim:** $90.65 \times 9.65 \times 8.80$

SSN 613 to SSN 615:

D: 4,250/4,770 tons **Dim:** $89.1 \times 9.65 \times 8.80$

S: 15/30 kts A: 4/533-mm TT (amidships) Man: 12 officers, 94 men

Electron Equipt: Radar: BPS-15, BPS-5 or 9-EW: WLR-1

Sonar: BQQ-3 (BQS-11 active/BQR-7 passive), BQS-14

M: 1 Westinghouse S5W reactor; 2 G.E. or de Laval GT; 1 prop; 15,000 hp

Remarks: Sister Thresher (SSN 593) was lost 10-4-63. SSN 605 has contrarotating props with a contrarotating turbine and no reduction gearing. SSN 613 to SSN 615 have longer and taller sails (6.1 m long vice 4.2 or 4.6 in other ships), heavier machinery, and had safety features built in that were later backfitted in the others. The BQR-7 spherical array is in the bow, necessitating placement of the tubes abreast the sail. These ships are fitted to carry Harpoon, and received Mk 117 torpedo-fire-control systems in place of Mk 113. SSN 594 conducted Harpoon trials during 1976. All are scheduled to receive the BQQ-5 sonar suit during refits. SSN 621 ran trials in 7-79 for the Sperry PASRAN (passive-ranging) sonar system, which is similar to the exported "Micro Puffs" concept, but with an array of six larger hydrophones.

♦ 2 Ethan Allen class (SCB 180 type) former ballistic-missile submarines

| | Bldr | Laid down | L | In serv. |
|-----------------------|--------------|-----------|---------|----------|
| SSN 609 SAM HOUSTON | Newport News | 28-12-59 | 2-2-61 | 6-3-62 |
| SSN 611 John Marshall | Newport News | 4-4-60 | 15-7-61 | 21-5-62 |

Authorized: FY 59



Thomas Jefferson (SSN 618) as SSBN 618

PH1 A. Legare, USN, 6-76

D: 6.930/7.880 tons **S**: 15/20 kts **Dim**: $124.96 \times 10.05 \times 9.0$

A: 4/533-mm TT (fwd) — up to 67 swimmers

Man: 13 officers, 111 men

Electron Equipt: Radar: BPS-9 — Sonar: BQR-7, BQR-15, BQR-19, BQS-4 M: 1 Westinghouse SW5 pressurized-water reactor, GT; 1/7-bladed prop; 15,000 hp

Remarks: Survivors of a class of five: first U.S. submarines designed from the outset to launch ballistic missiles. Retained Polaris A-3 missiles until redesignated SSN: SSBN 609 on 10-11-80; SSBN 611 on 1-5-81 at conclusion of final Polaris cruises. Modified by 1984 for further service as SSNs. Beginning with SSN 608 in 1-82 and followed by SSN 609 and 610 in FY 83 and the others in FY 84, cement ballast filled the 16 missile tubes, one of the two Mk 2 Mod. 3 SINS (Ship's Inertial Navigation Systems) was removed, and the Mk 84 missile-control system was depleted. Formerly had two complete crews; complement reduced as SSNs. Deeper-diving (300 m +) than SSN 598 class. Both in Pacific Fleet. Converted beginning 10-84 to carry up to 67 SEAL swimmers at Puget Sound Naval SY.

Sisters Ethan Allen (SSN 608) deactivated 30-9-82 and decommissioned 31-3-83; Thomas A. Edison (SSN 610) deactivated 30-9-83 for decommissioning 15-1-84, Thomas Jefferson (SSN 618) deactivated beginning 1-6-84 for decommissioning 24-1-85—all three in storage for later disposal.

Note: The two remaining George Washington-class SSNs (ex-SSBN) have been decommissioned to storage for ultimate scrapping; George Washington (SSN 598) on 24-1-85 and Patrick Henry (SSN 599) on 3-2-85.

♦ 1 Tullibee class (SCB 178 type)

 Bldr
 Laid down
 L
 In serv.

 SSN 597 TULLIBEE
 Gen. Dynamics
 26-5-58
 27-4-60
 9-11-60

Authorized: FY 58



Tullibee (SSN 597) — PUFFS domes now removed

U.S. Navy, 1975

D: 2,336/2,607 tons S: 15/20 kts Dim: 83.15 × 7.31 × 6.1

A: 4/533-mm Mk 64 TT (amidships)

Electron Equipt: Radar: 1/BPS-9 - EW: WLR-1

Sonar: BQQ-3 (BQS-12 active/BQR-7 passive)

M: 1 Combustion Engineering S2C reactor, turboelectric propulsion; 1 prop; 2,500 hp

Man: 6 officers, 50 men

Remarks: The torpedo tubes have a 10° angle from the centerline. PUFFS hydrophones were mounted in three fins along the top of the hull. Mk 112 Mod. 1 torpedo-fire-control system. Active in Atlantic Fleet, but considered to be second-line.

Note: The one-of-a-kind nuclear-powered submarines *Halibut* (SSN 587, ex-SSGN 587) and *Triton* (SSN 586, ex-SSRN-586), in reserve since 30-6-76 and 3-5-69, respectively, have for all intents and purposes been discarded, although they remain in storage for ultimate scrapping.

♦ 5 Skipjack class (SCB 154 type)

| | Bldr | Laid down | L | In serv. |
|------------------|------------------|-----------|----------|----------|
| SSN 585 SKIPJACK | Gen. Dynamics | 29-5-56 | 26-5-58 | 15-4-59 |
| SSN 588 SCAMP | Mare Island, NSY | 23-1-59 | 8-10-60 | 5-6-61 |
| SSN 590 Sculpin | Ingalls | 3-2-58 | 31-3-60 | 1-6-61 |
| SSN 591 SHARK | Newport News SB | 24-2-56 | 16-3-60 | 9-2-61 |
| SSN 592 SNOOK | Ingalls | 7-4-58 | 31-10-60 | 24-10-61 |

Authorized: SSN 585 in FY 56, SSN 558 and SSN 590 to SSN 592 in FY 57

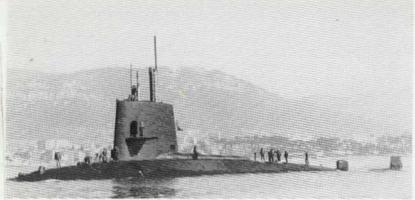
D: 3,080/3,500 tons S: 15/30 kts Dim: 76.8 × 9.75 × 8.5

A: 6/533-mm TT (fwd) Man: 9 officers, 85 men

Electron Equipt: Radar: BPS-12—Sonar: Modified BQS-4, BQR-2, SQS-49
M: 1 Westinghouse S5W reactor; SSN 585; 2 Westinghouse GT, others: 2 G.E.

G.T.; 1 prop; 15,000 hp

Remarks: The reactor compartment takes up 6.10 m. Between the reactor and the propeller, all engine fittings are duplicated (two heat exchangers, two pressurized-water coolers; two groups of turbines, two groups of turbo generators). In case of emergency, submerged propulsion can take over by means of two electric motors linked directly on the propeller shaft and feeding off two electric batteries or two small diesel generators. Better hull form than later SSNs. Still considered first-line subma-



Sculpin (SSN 590)

G. Gyssels, 4-84

rines. Mk 101 Mod. 17 torpedo-fire-control system. Sister Scorpion (SSN 589) disappeared in the Atlantic about 27-5-68.

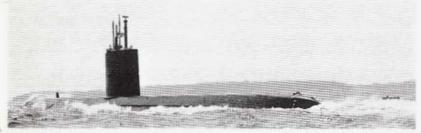
2 Skate class (SCB 121 type)

 Bldr
 Laid down
 L
 In serv.

 SSN 579 Swordfish
 Portsmouth NSY
 25-1-56
 27-8-57
 15-9-58

 SSN 583 Sargo
 Mare Island NSY
 21-2-56
 10-10-57
 1-10-58

Authorized: SSN 579 in FY 55, SSN 583 in FY 56



Sargo (SSN 583)

L. & L. Van Ginderen, 8-84

D: 2,570/2,860 tons S: 15/19 kts Dim: 81.4 × 7.62 × 6.1

A: 8/533-mm TT (6 fwd, 2 aft)

Electron Equipt: Radar: BPS-12-Sonar: BQR-2, SQS-49

M: 1 Westinghouse reactor — S3W in SSN 578 and SSN 583, S4W in SSN 579 and SSN 584; 2 GT; 2 props; 13,200 hp

Man: 9 officers, 86 men

Remarks: SSN 578 passed under the North Pole twice (8-58), coming to the surface nine times while in ice-capped waters during this cruise. She ran 120,862 miles in 39 months with her first core. Mk 101 Mod. 19 torpedo-fire-control system. Now considered second-line submarines. Seadragon (SSN 584) began deactivation 30-9-83 for decommissioning to reserve 12-6-84; Skate (SSN 578) stood down late in 1985 for decommissioning 3-8-85—both placed in storage for ultimate scrapping.

♦ 1 Seawolf class (SCB 64A type)

 Bldr
 Laid down
 L
 In serv.

 SSN 575 Seawolf
 Gen. Dynamics
 15-9-53
 21-7-55
 30-3-57

Authorized: FY 53



Seawolf (SSN 575) - note side-thrusters fore and aft

U.S. Navy, 1977

D: 4,400/4,970 tons S: 20/20 kts Dim: 102.87 × 8.45 × 6.7

A: 6/533-mm TT (fwd) Man: 11 officers, 90 men

M: 1 Westinghouse S2WA reactor; 2 GT; 2 props; 15,000 hp

Electron Equipt: Radar: BPS-15—EW: WLR-1 Sonar: BQR-4, SQS-51 Remarks: The original propulsion plant, which was by an S2G reactor with sodium cooling, did not prove satisfactory and was replaced by an S2WA. Four side-thrusters, two forward and two aft, have been added to the casing above the pressure hull for precision maneuvering while submerged, and foundations have been added at the stern to permit a DSRV to be carried and to mate with the after rescue hatch. Mk 101 Mod. 8 torpedo-fire-control system. Now considered a second-line submarine; to decommission during 1986.

Note: The Nautilus (SSN 571), the world's first nuclear-powered ship, was placed in technical reserve on 30-9-79 and formally decommissioned 3-3-80. She was stripped of her reactor plant and towed in 1985 to Groton, Connecticut, where she serves as a monument to the technical achievements of the U.S. submarine service and Adm. H.G. Rickover, her dauntless creator.

CONVENTIONAL SUBMARINES

* 3 Barbel class (SCB 150 type)

| | Bldr | Laid down | L | In serv. |
|-----------------|----------------|-----------|----------|----------|
| SS 580 BARBEL | Portsmouth NSY | 18-5-56 | 19-7-58 | 17-1-59 |
| SS 581 BLUEBACK | Ingalls | 15-4-57 | 16-5-59 | 15-10-59 |
| SS 582 Bonefish | New York SB | 3-6-57 | 22-11-58 | 9-7-59 |

Authorized: FY 56



Bonefish (SS 582)

L. & L. Van Ginderen, 9-84



Blueback (SS 581)

G. Arra, 1985

D: 1,740/2,146/2,640 tons S: 12/25 kts Dim: 66.75 × 8.84 × 5.8

A: 6/533-mm TT (fwd)

Electron Equipt: Radar: BPS-12-Sonar: BQR-2, SQS-49

EW: WLR-1

M: 3 1,600-hp Fairbanks-Morse 38D8 × 10 diesels, 1 Westinghouse electric motor; 1 prop; 3,150 hp

Man: 8 officers, 70 men

Remarks: Teardrop hull design. Diving planes were moved to the sail structure in 1961-62. Dutch Zwaardvis class based on this design. Mk 101 Mod. 20 torpedo-fire-control system. Last conventional submarines built for the U.S. Navy. SS 582 transferred to the Atlantic Fleet in 1982, the only U.S. Navy diesel-powered submarine in that area.

• 1 Darter class (SCB 116 type)

 Bldr
 Laid down
 L
 In serv.

 SS 576 Darter
 Electric Boat Co.
 10-11-54
 28-5-56
 26-10-56

Authorized: FY 54

D: 1,590/1,975/2,250 tons **S**: 16/20 tons **Dim**: $81.68 \times 8.23 \times 5.8$

A: 8/533-mm TT (6 fwd, 2 aft)

Electron Equipt: Radar: 1/BPS-12-EW: WLR-1

Sonar: BQS-4, BQG-4 (PUFFS), BQR-4

M: 3 Fairbanks-Morse 38D8% × 10 diesels, 2 Westinghouse motors; 2 props; 3,200 hp

Man: 8 officers, 75 men

CONVENTIONAL SUBMARINES (continued)



Darter (SS 576)

G. Arra, 1-80

Remarks: Very similar to the ultimate configuration of the Tang class, Mk 106 Mod. 11 torpedo-fire-control system. Home-ported as Sasebo, Japan, in 3-79. To have been stricken in 9-79, but has been retained in service. Collided with merchant ship 18-6-85 but not badly damaged. Near-sister Kusseh (ex-Trout, SS 566) of the similar Tang class transferred to Iran 19-12-79 and later abandoned, remains in storage in good condition at Philadelphia Naval SY; sister Wahoo (ex-SS 565), stricken 27-6-80, was towed away for scrap 4-85.

Note: The research submarine Dolphin (AGSS 555) is described later, with auxiliary ships.

BATTLESHIPS

♦ 2 (+2) Iowa class

| | Bldr | Laid down | L | In serv. | Recomm. |
|------------------|------------------|-----------|---------|----------|----------|
| BB 61 Iowa | New York NSY | 27-6-40 | 27-8-42 | 22-2-43 | 28-4-84 |
| BB 62 New Jersey | Philadelphia NSY | 16-9-40 | 7-12-42 | 23-5-43 | 28-12-82 |
| BB 63 Missouri | New York NSY | 6-1-41 | 29-1-44 | 11-6-44 | 10-5-86 |
| BB 64 Wisconsin | Philadelphia NSY | 25-1-41 | 7-12-43 | 16-4-44 | 1-89 |

 $\begin{array}{lll} \textbf{D:} \ \ 46,177 \ tons \ light \ (57,353 \ fl) & \textbf{S:} \ 33 \ kts \ (30.5 \ sust.) \\ \textbf{Dim:} \ \ 270.57 \ (262.13 \ pp) \times 33.00 \times 11.02 \\ \textbf{A:} \ \ 32/Tomahawk \ \ (IV \times 8) - 16 \ \ Harpoon \ \ \ (IV \times 4) - 9/406 \ mm \ \ \ (III \times 3) - 12/127 \ mm \ DP \ (II \times 6) - 4/20 \ mm \ Mk \ 15 \ CIWS \ gatling \ AA \ (I \times 4) - up \ to \ 4 \end{array}$ helicopters



Iowa (BB 61)

G. Arra, 1984



New Jersey (BB 62)

G. Arra, 1983



New Jersey (BB 62)

Pradignac & Leo, 1983



Iowa (BB 61) - midships superstructure

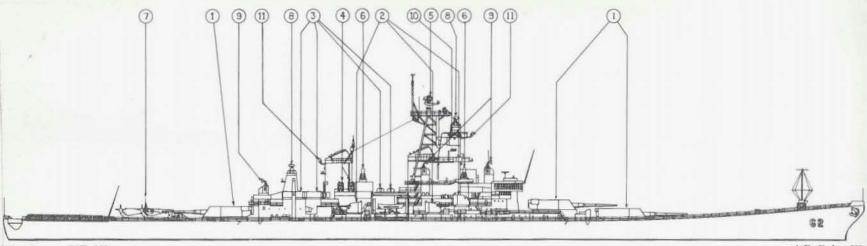
G. Arra, 1984



New Jersey (BB 62)

G. Arra, 1983

BATTLESHIPS (continued)



New Jersey (BB 62)

A.D. Baker III

1. 406-mm triple turret 2. 127-mm twin DP 3. Tomahawk box-launcher (IV × 8) 4. Harpoon canister launcher (IV × 4) 5. SPS-49 radar 6. Mk 15 20-mm gatling CIWS 7. Helicopter parking area 8. Mk 38 GFCS (with Mk 13 radar) 9. Mk 37 GFCS (with Mk 25 radar) 10. SLQ-32 EW gear 11. OE-82 SATCOMM antennas



Iowa (BB 61)

Ingalls SB, 4-84

Electron Equipt: Radar: 1/LN-66, 1/SPS-67, (BB 62: SPS-10F), 1/SPS-49, 2/Mk 13, 4/Mk 25
TACAN: URN-25

EW: SLQ-32(V)3, Mk 36 SRBOC chaff RL (VI × 8)

M: 4 sets G.E. GT; 4 props; 212,000 hp Electric: 10,500 kw

Boilers: 8 Babcock & Wilcox; 44.6 kg/cm², 454 °C Fuel: 8,800 tons Armor: Belt: 307-mm, tapering to 41-mm (343-mm abreast prop shafts)

Main turrets: 432-mm face/184-mm top/305-mm back

Barbettes: 295-mm max.

Decks: 3 armored (152-mm second deck)

Conning tower: 440-mm (184-mm top)

Range: 5,000/30; 14,800/20

Man: BB 62: 74 officers, 1,471 men; BB 61: 67 officers, 1,459 men

Remarks: BB 62, reactivated 6-4-68 for Vietnam service and decommissioned again 17-12-69, was towed from the Bremerton, Washington, mothball facility on 27-7-81, arriving 8-6-81 at Long Beach Naval Shipyard. Congress voted \$326 mil. under FY 82 to modernize the ship with new radars and gear, Tomahawk and Harpoon cruise missiles, upgraded communications gear (including the WSC-3 SATCOMM system), seven new 125-ton/hr. air-conditioning plants, provision for Link-11 data link (but not NTDS), and conversion of the boilers to burn distillate fuel (which cut endurance by approx. 10 percent). Further modifications ("Phase II") are no longer planned. Funds were authorized in FY 82 for work on BB 61 at Avondale SY, New Orleans, and Ingalls, Pascagoula. BB 63, towed to Long Beach Naval SY, began reactivation 1-10-84. Funds to reactivate B 64 were authorized under FY 86, with work to take place 1-87 to 1-89. These ships act in autonomous battle groups, augmenting carrier forces on carrying out independent assignments.

The helicopter facilities include increased parking area to accommodate up to four helicopters, but there is no hangar; some maintenance facilities, a control cab, fuel tankage, and a glide-path indicator were added. The Tomahawk missiles are in eight

elevating armored box launchers, while the Harpoons are placed abreast the after stack in the standard fixed 4-missile canister arrangement. BB 62 successfully launched her first land-attack Tomahawk on 10-5-83 and deployed with eight aboard in 6-83.

The 406-mm guns are controlled by two Mk 38 radar (Mk 13) GFCS and one Mk 40 director, while four Mk 37 GFCS (with Mk 25 radar) will be retained for the 127-mm guns. BB 62's six Mk 56 AA GFCS were replaced by the Vulcan/Phalanx (Mk 15 CIWS) gatling guns and 8 Super RBOC chaff launchers. While in reserve, BB 61 retained 6 Mk 56 and 2 Mk 63 GFCS, and BB 63 had 6 Mk 57 and 2 Mk 63 GFCS; BB 64 had all light AA GFCS removed when decommissioned in 1958. As activated have WRN-5A NAVSAT, Omega, and other modern navigational systems.

NUCLEAR-POWERED GUIDED-MISSILE CRUISERS

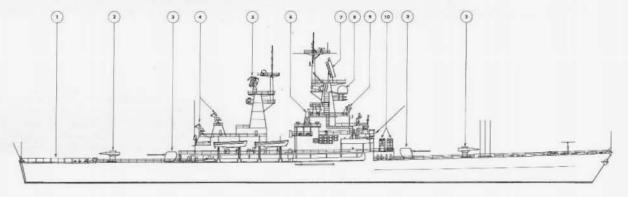
• 4 Virginia class

| | Bldr | Laid down | L | In serv. |
|--------------------|-----------------|-----------|----------|----------|
| CGN 38 VIRGINIA | Newport News SB | 19-8-72 | 14-12-74 | 11-9-76 |
| CGN 39 Texas | Newport News SB | 18-8-73 | 9-8-75 | 10-9-77 |
| CGN 40 Mississippi | Newport News SB | 22-2-75 | 31-7-76 | 5-8-78 |
| CGN 41 ARKANSAS | Newport News SB | 17-1-77 | 21-10-78 | 18-10-80 |

Authorized: CGN 38 in FY 70, CGN 39 in FY 71, CGN 40 in FY 72, and CGN 41 in FY 75

D: 10,400 tons light (11,300 fl) S: 30+ kts Dim: 177.3 × 19.2 × 9.6 (sonar; 7.4 hull)

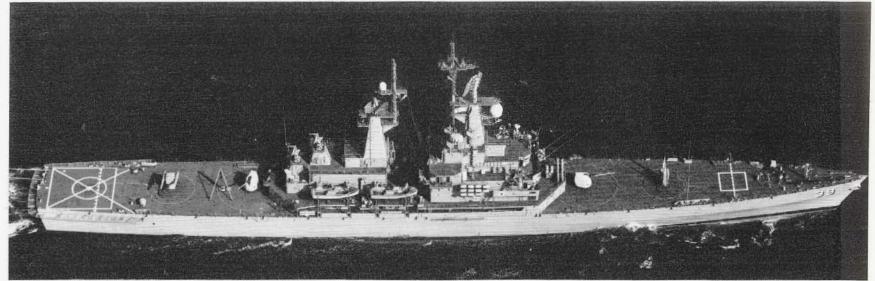
A: 8/Harpoon SSM (IV × 2) — 2/Mk 26 launchers (II × 2; 68 total Standard SM-1 MR surface-to-air and ASROC ASW missiles) — 2/127-mm Mk 45 DP (I × 2) — CGN 38, 40: 2/20-mm Mk 15 CIWS gatling AA (I × 2) all: 4/12.7-mm mg (I × 4) — 6/324-mm Mk 32 ASW TT (III × 2, Mk 46 torpedoes) — 1/SH-2F LAMPS-II ASW helicopter (CGN 41 also 8/Tomahawk SSM (IV × 2)



Virginia (CGN 38)

A.D. Baker III

1. Helicopter flight deck (over hangar) 2. Mk 26 guided-missile launcher 3. 127-mm Mk 45 gun 4. SPG-51D radar missile directors 5. SPS-40B air-search radar 6. Mk 15 CIWS, 20-mm Vulcan/Phalanx AA(Note: Should be shown one deck higher, with SLQ-32 array mounted in the lower position.) 7. SPS-48B 3-D air-search radar 8. SPG-9A gun-control radar 9. SPG-60D missile/gun-control radar 10. Harpoon anti-ship missiles (IV × 2)



Texas (CGN 39) - note large platforms abreast foremast for future addition of Vulcan/Phalanx

LCDR G. Moe/Ltjg R. Dickerson, USN 1983



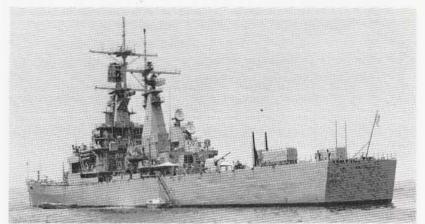
Mississippi (CGN 40) - with Mk 15 CIWS

Pradignac & Leo, 2-85



Texas (CGN 39)

Pradignac & Leo, 1984



Arkansas (CGN 41) - with Tomahawk box-launchers aft

G. Arra, 7-85

Electron Equipt: Radar: 1/LN-66, 1/SPS-55, 1/SPS-40B, 1/SPS-48A, 2/SPG-51D, 1/SPQ-9A, 1/SPG-60D

Sonar: 1/SQS-53A TACAN: CGN 40: URN-20, SRN-15; CGN 41: URN-25 EW: SLQ-32(V)3, Mk 36 SRBOC chaff RL (VI \times 4)

M: 2 G.E. D2G reactors; 2 props; 70,000 hp Man: 38 officers, 490 men

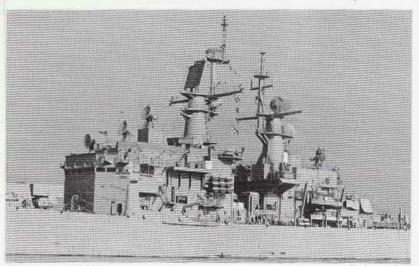
Remarks: These ships are expected to operate for 10 years on one nuclear fueling. The Standard SM-1 MR antiaircraft missiles, stowed vertically, will be replaced by SM-2-MR, and the ships are intended to receive the "New Threat Upgrade" combat system improvements. Eventually, the ships will carry eight Tomahawk cruise missiles in two armored box-launchers. A hangar is fitted beneath the fantail, the helicopter being raised to the main deck by elevator. These ships are no longer scheduled to carry UH-60B LAMPS-III helicopters. CGN 40 and 41 have SPS-48C vice 48A. All have WSC-3 SATCOMM and NTDS data system. The missile-fire-control system is Mk 74; ASW fire control is Mk 116; and the GFCS is Mk 86 Mod. 5. SQS-53A sonar is a

greatly improved version of SQS-26. Kevlar plastic armor is being added over vital topside and magazine spaces during sequential overhauls scheduled from FY 82 to FY 86. Mk 16 CIWS is being added on an 05 level platform, with the SLQ-32(V)3 arrays being moved down to the platform originally intended for the guns; this prevents electronic interference. CGN 41, with Tomahawk, lost helicopter capability.

♦ 2 California class (SCB 241.65 type)

| | Bldr | Laid down | L | In serv. |
|-----------------------|-----------------|-----------|---------|----------|
| CGN 36 CALIFORNIA | Newport News SB | 23-1-70 | 22-9-71 | 16-2-74 |
| CGN 37 South Carolina | Newport News SB | 1-12-70 | 1-7-72 | 25-1-75 |

Authorized: CGN 36 in FY 67, CGN 37 in FY 68



California (CGN 36) - superstructure

G. Arra, 1984



South Carolina (CGN 37) - with Mk 15 CIWS

G. Gyssels, 1985

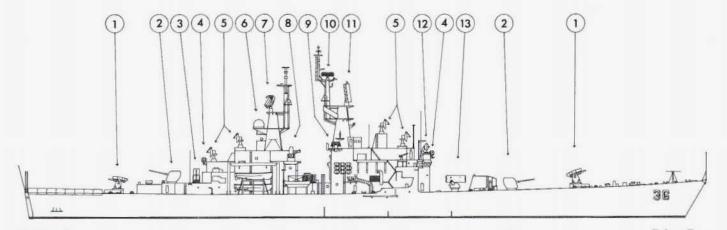


California (CGN 36) — note Harpoon launchers just forward of aft 127-mm gun G. Arra, 1984



California (CGN 36) - with Mk 15 CIWS

ABPH M. Russell, R.A.N., 7-85



Robert Dumas

1. MK 13 Standard SM-1 MR SAM launchers

2. 127-mm Mk 45 DP

3. Harpoon SSM canister launchers (IV × 2)

4. UHF satellite communications antennas

5. SPG-51D radar directors

6. SPQ-9A gun f.c. radar

7. SPS-40 air-search radar

8. 20-mm Mk 15 CIWS gatling AA

9. SLQ-32(V)3 EW antenna

10. SPS-10 surface-search radar

11. SPS-48C

3-D air-search radar antenna

12. SPG-60D gun f.c. radar director

13. ASROC ASW RL

D: 9,676 tons light (10,530 fl) S: 30+ kts

Dim: 181.66 × 18.6 × 9.6 (sonar: 7.4 hull) Man: 28 officers, 512 men

A: 8/Harpoon SSM (IV × 2) - 2/Mk 13 launchers (I × 2; 80 Standard SM-1 MR missiles) -2/127-mm Mk 45 DP (I × 2) -2/20-mm Mk 15 CIWS AA (1 × 2) —4/12.7-mm mg (1 × 4) —1/Mk 116 ASROC ASW RL (VIII × 1)-4/324-mm Mk 32 ASW TT (II × 2)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40B, 1/SPS-48C, 4/SPG-51D, 1/SPQ-9A, 1/SPG-60 Sonar: 1/SQS-26CX — TACAN: URN-25

EW: SLQ-32(V)3, Mk 36 SRBOC chaff RL (VI × 4) M: 2 G.E. D2G pressurized-water reactors, 2 GT; 2 props; 70,000 hp

REMARKS: Each Mk 13 launcher magazine holds 40 vertically stowed missiles, and the ASROC system includes automatic reloading from a magazine on deck, forward of the launcher. Both will eventually get Tomahawk in two 4-missile box launchers. They have no helicopter hangar. Weapons are controlled by the Mk 11 Mod. 3 direction system, handling two Mk 74 Mod. 2 missile fire-control systems and Mk 86 Mod. 3 gunfire-control system. ASW fire is controlled by a Mk 114 system. Both have WSC-3 SATCOMM and NTDS data system. Kevlar plastic armor will be added over vital spaces in overhauls scheduled for 1986 and 1987. Eventually, SPS-67 will replace SPS-10, and SPS-49 the SPS-40B. Both will receive the NTU (New Threat Upgrade) modernization.

♦ 1 Truxtun class (SCB 222 type)

Program Laid down In serv. CGN 35 TRUXTUN New York SB. FY 62 17-6-63 19-12-64 27-5-67 Camden, N.J.



Truxtun (CGN 35) -2 Mk 15 CIWS added

J. Zeitlhofer, 7-84

D: 8,000 tons light (8,800 fl) S: 30+ kts Dim: 171.91 × 17.67 × 9.5 (sonar, 7.3 hull)

A: 8/Harpoon (IV × 2) -1/Mk 10 launcher (II × 1, for 40 Standard SM-1 ER and 20 ASROC missiles) - 1/127-mm Mk 42, 54-cal. DP - 2/20-mm Mk 15 CIWS AA (I×2)-4/12.7-mm mg (I×4)-4/324-mm Mk 32 ASW TT (II × 2) -1/SH-2F LAMPS-II ASW helicopter

Electron Equipt: Radar: 1/LN-66, 1/SPS-67, 1/SPS-40D, 1/SPS-48C, 1/SPG-53F, 2/SPG-55B Sonar: 1/SQS-26BX — TACAN: URN-25

EW: WLR-1, SLQ-32(V)3, Mk 36 SRBOC chaff RL (VI × 4)

M: 2 G.E. D2G pressurized-water reactors, 2 sets GT; 2 props; 70,000 hp Electric: 14,500 kw Man: 36 officers, 530 men

Remarks: During 4-10-82 to 4-84 received two Vulcan/Phalanx Mk 15 CIWS 20-mm AA, new TACAN, and EW suite. Eight Harpoon SSM (IV × 2) replaced 2/76.2-mm DP in 1980. Two Mk 25 torpedo tubes at stern removed. Eventually will carry the SM-2 ER SAM and will receive the NTU (New Threat Upgrade) modernization. The magazine has 3/20-missile horizontal drums. Has flag accommodations for six officers and twelve enlisted in addition to crew, Mk 76 Mod. 6 missile-control system. Mk 68 fire-control system for the 127-mm gun. Has Mk 14 weapon direction system, WSC-3 SATCOMM, and NTDS data system. Mk 114 ASW fire-control system. The fixed Mk 32 ASW TT are mounted within the superstructure.

1 Bainbridge class

Bldr Program Laid down In serv. CGN 25 BAINBRIDGE Bethlehem Steel, 15-4-61 6-10-62 FY 59 5-59 Quincy

D: 8,000 tons light (9,100 fl) S: 30+ kts

Dim: 172.21 (167.65 wl) \times 17.57 \times 9.5 (sonar, 7.3 hull) Electric: 14,500 kw A: 8/Harpoon SSM (IV \times 2) — 4/Mk 10 launchers (Π \times 2; 80 Standard SM-2 ER missiles) -2/20-mm Mk 15 CIWS gatling AA (I × 2) -4/12.7-mm mg (I × 4) - 1/Mk 116/ASROC ASW RL (VIII × 1) - 6/324-mm Mk 32 ASW $TT(III \times 2)$



Bainbridge (CGN 25) - new radars, Mk 15 CIWS added

J. Zeitlhofer, 8-85



Bainbridge (CGN 25)

G. Arra, 8-85

Electron Equipt: Radar: 1/LN-66, 1/SPS-67, 1/SPS-480, 1/SPS-49, 4/SPG-55B Sonar: 1/SQQ-23 — TACAN: URN-25 EW: WLR-1, SLQ-32(V)3, Mk 36 SREOC (VI × 6)

M: 2 G.E. D2G reactors, 2 GT; 2 props; 70,000 hp Man: 42 officers, 500 men

Remarks: In refit-modernization at Puget Sound NSY from 6-74 to 9-76 to improve AAW; refit completed at San Diego in 4-77. Obsolete 76.2-mm DP removed, temporarily replaced by two 20-mm AA, 1978-79. Two quadruple Harpoon canister launch groups replaced the 20-mm AA during 1979, those to port firing forward and those to starboard firing aft. Large deckhouse added aft to house NTDS data system. Two Mk 15 Vulcan/Phalanx 20-mm AA added during 10-83 to 4-85 refit; SPS-37 replaced by SPS-49, SLQ-32(V)3 ECM/ESM and Mk 36 RBOC chaff-flare system added and missile system updated to launch standard SM-2 ER. Helicopter platform but no hangar. Mk 111 ASW fire-control system, two Mk 76 missile fire-control systems. Mk 14 weapons direction system. Has flag accommodations for 6 officers, 12 men.

1 Long Beach class (SCB 169 type)

Bldr Program Laid down In serv. CGN 9 LONG BEACH Bethlehem Steel, 2-12-57 FY 57 14-7-59 9-9-61 (Quincy)

D: 15,100 tons light (17,100 fl) S: 30.5 kts Dim: 219.75 × 22.35 × 9.45 (over

A: 8/Tomahawk SSM (IV × 2) - 16/Harpoon SSM (IV × 2) - 1/Mk 10 Mod. 0 and 1/Mk 10 Mod. 1 launcher (II × 2, 120 Standard SM-2 ER missiles) 2/127-mm 38-cal. DP (I \times 2) — 2/20-mm Mk 15 CIWS AA (I \times 2) — 1/Mk 116 ASROC ASW RL (VIII \times 1) — 6/324-mm ASW TT (III \times 2)

Electron Equipt: Radar: 1/LN-66, 1/SPS-67, 1/SPS-48C, 1/SPS-49, 4/SPG-55D, 2/Mk 35

Sonar: SQQ-23 PAIR (single-dome) — TACAN: URN-25 EW: SLQ-32(V)3, Mk 36 SRBOC chaff RL (VI × 4)



Long Beach (CGN 9) - with Tomahawk box-launchers aft



Long Beach (CGN 9)

M: 2 Westinghouse C1W pressurized-water reactors, 8 Foster-Wheeler heat exchangers, 2 sets G.E. GT; 2 props; 80,000 hp

Electric: 17,000 kw

Man: 86 officers, 1,076 men, + flag group: 10 officers, 58 men

Remarks: The first U.S. surface ship to have nuclear propulsion. Original number was CLGN 160, then CGN 160. Originally intended to carry Regulus-II cruise missiles and eight Polaris ballistic missiles. Under FY 77, Congress appropriated long-lead funds to equip the ship with Aegis radar/fire-control system, since it is planned to operate the ship into the twenty-first century; the radical modernization plans were, however, canceled in 12-76.

Long Beach entered Puget Sound NSY 6-10-80 for a less-extensive two-year modernization period. The Mk 12 launch system aft for Talos missiles (deactivated in 1978) was stripped out in 1979, and the pedestals on the after superstructure that formerly supported SPG-49B Talos missile-direction radars carry the two Mk 15 CIWS (Vulcan/Phalanx) gatling AA guns. Harpoon canister clusters, arranged to fire athwartships, were situated abaft the superstructure, which is surmounted by a tall lattice mast to support the antenna for the SPS-49 air-search radar. The "billboard" fixed-array antennas on the blockhouse-style forward superstructure were removed, and the forward superstructure received 44-mm aluminum armor. Radar foundations and waveguides also were armored. SPS-48C replaced SPS-12 on the foremast. The obsolescent Mk 30, 127-mm, dual-purpose guns and their two equally aged Mk 56 directors (Mk 35 radars) were retained, as were the original ASW weapons and the forward missile-launching arrangements. No helicopter hangar was provided, only a pad on the stern. The Mk 10 Mod. 0 launcher for Standard missiles has two magazine drums, each holding 20 missiles; the Mk 10 Mod. 1 in the upper position has four magazine drums. Standard SM-2 ER has been substituted for SM-1 ER. The Long Beach will continue to have flagship facilities (10 officers, 58 men), and extensive satellite-communications facilities are provided. The Tactical Flag Command Center (TFCC) will be added at her next overhaul, as will additional protective armor. Armored box-launchers for Tomahawk SSM replaced the Harpoon SSMs in 1985; the Harpoon canister launchers were relocated atop the after superstructure.

GUIDED-MISSILE CRUISERS

♦ 4 (+15+8) Ticonderoga class

| | Bldr | Laid down | L | In serv. |
|-------------------|---------------------|-----------|---------|----------|
| CG 47 TICONDEROGA | Ingalls, Pascagoula | 21-1-80 | 25-4-81 | 22-1-83 |
| CG 48 Yorktown | Ingalls, Pascagoula | 19-10-81 | 17-1-83 | 4-7-84 |

POPHOT S. Given, R.A.N., 6-84

| CG 49 VINCENNES | Ingalls, Pascagoula | 20-10-82 | 14-1-84 | 6-7-85 |
|-----------------------|------------------------------|----------|--------------|---------|
| CG 50 VALLEY FORGE | Ingalls, Pascagoula | 14-4-83 | 23-6-84 | 18-1-86 |
| CG 51 THOMAS S. GATES | Bath Iron Works | 23-8-84 | 14-12-85 | 1-87 |
| CG 52 BUNKER HILL | Ingalls, Pascagoula | 11-1-84 | 11-3-85 . | 8-86 |
| CG 53 MOBILE BAY | Ingalls, Pascagoula | 5-6-84 | 10-85 | 2-87 |
| CG 54 ANTIETAM | Ingalls, Pascagoula | 15-11-84 | 2-86 | 7-87 |
| CG 55 LEYTE GULF | Ingalls, Pascagoula | 18-3-85 | 6-86 | 11-87 |
| CG 56 SAN JACINTO | Ingalls, Pascagoula | 22-7-85 | 10-86 | 3-88 |
| CG 57 LAKE CHAMPLAIN | Ingalls, Pascagoula | 2-86 | 4-87 | 6-88 |
| CG 58 N | Bath Iron Works | -86 | 1-87 | 6-88 |
| CG 59 N | Ingalls, Pascagoula | 6-86 | 9-87 | 1-89 |
| CG 60 N | Bath Iron Works | 1 | | 3-89 |
| CG 61 N | Bath Iron Works | | | 7-89 |
| CG 62 N | Ingalls, Pascagoula | | | 10-89 |
| CG 63 N | Bath Iron Works | | | |
| CG 64 N | Bath Iron Works | | | |
| CG 65 N | Ingalls, Pascagoula | | | |
| CG 66 N | | | | |
| CG 67 N | | | | |
| CG 68 N | | | 41414 | |
| CG 69 N | | | | |
| CG 70 N | | | | |
| CG 71 N | | 4 4 4 | 4040 | |
| CG 72 N | | 4.4.6 | | |
| CG 73 N | | | | *** |
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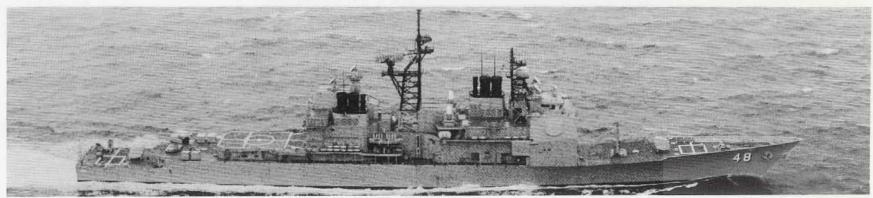
Authorized: CG 47 in FY 78, CG 48 in FY 80, CG 49-50 in FY 81, CG 51-53 in FY 82, CG 54-56 in FY 83, CG 57-59 in FY 84, CG 60-62 in FY 85, CG 63-65 in FY 86; planned: 2/yr. through CG 73 in FY 90

D: 7,260 tons light (9,530 ff; CG 49; 9,400; CG 52; 9,500 ff)

S: 30+ kts Dim: 172.5 (162.4 wl) × 16.76 × 6.52 (9.57 over sonar)

A: CG 47-51: 2/Mk 26 Mod. 1 launchers (II × 2; 68 Standard SM-2 MR and 20 ASROC) —8/Harpoon SSM (IV × 2) —2/127-mm Mk 45 DP (I × 2) —2/20-mm Mk 15 CIWS AA (I × 2) —4/12.7-mm mg (I × 4) —6/324-mm Mk 32 ASW TT (III × 2) —1 or 2/SH-2F LAMPS-I (CG 49-51: SH-60B LAMPS-III) ASW helicopters CG 52-73: 2/Mk 41 Mod. 0 vertical launch groups (122 missiles: Standard

SM-2 MR, Tomahawk, and ASROC—no ASROC in CG 52-55) —2/127-mm Mk 45 Mod. 1 DP (I × 2)—2/20-mm Mk 15 CIWS

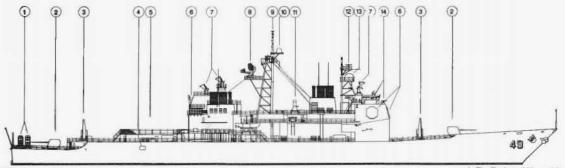


Yorktown (CG 48) - on initial sea trials

Ingalls SB, 17-1-84



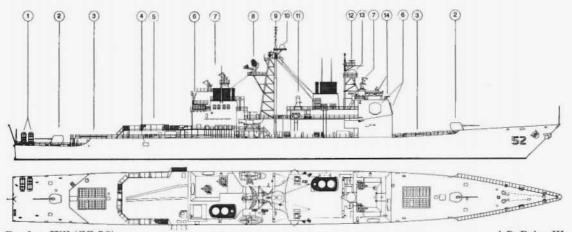
Vincennes (CG 49) - note lighter tripod masts and lower superstructure amidships than on CG 47 and CG 48



Vincennes

A.D. Baker III, 1-86

1. Harpoon SSM 2. 127-mm Mk 45 DP 3. Mk 26 GMLS 4. Mk 32 ASW TT (behind shutters) 5. helicopter deck 6. AN/SPY-1A radar 7. AN/SPG-62 illuminator 8. AN/SPS-49(V)6 radar 9. AN/URN-25 TACAN 10. AN/SQQ-28 LAMPS antenna 11. 20-mm Mk 15 CIWS 12. AN/SPS-55 radar 13. AN/SPQ-9 radar director 14. AN/SPS-64 radar



Bunker Hill (CG 52)

A.D. Baker III

1. Harpoon SSM 2. 127-mm Mk 45 DP 3. Mk 41 Mod. 0 vertical launch 4. Mk 32 ASW TT (behind shutters) 5. helicopter deck 6. AN/SPY-1A radar 7. AN/SPG-62 illuminator 8. AN/SPS-49(V)6 radar 9. AN/URN-25 TACAN 10. AN/SQQ-28 LAMPS antenna 11. 20-mm Mk 15 CIWS 12. AN/SPS-55 radar 13. AN/SPQ-9 radar director 14. AN/SPS-64 radar



Valley Forge (CG 50)





Bunker Hill (CG 52) - note tripod after mast, vertical launchers, reduced superstructure amidships V. Piecyk/RCA, 11-83



Ticonderoga (CG 47)

L. & L. Van Ginderen, 9-85



Vincennes (CG 49)

Ingalls SB, 1985

AA (I \times 2) — 6/324-mm Mk 32 Mod. 14 ASW TT (III \times 2) —1 or

Remarks: Greatly revised version of the Spruance-class destroyer, using same hull and propulsion but incorporating the Aegis Mk 7 weapon system (SPY-1A phased-array radar, four missile illuminator radars, Mk 26 missile-launch system, etc.). Designa-

tion changed from DDG to CG in late 1979. A total of 27 to be built. Named for battles and campaigns, except for CG 51, named for a former Secretary of Defense and of the

Each Mk 26 Mod. 1 missile-launcher magazine holds 44 missiles, the forward magazine holding the 20 ASROC. The Mk 86 fire-control system for the 127-mm guns provides no AA capability in this class, as no SPG-60 radar is carried. The R.C.A.built Aegis Mk 7 Mod. 2 system, which uses 12 UYK-7 and 1 UYK-20 computers, uses the four fixed faces of the SPY-1A radar to detect and track up to several hundred targets simultaneously; the four illuminators are slaved to the system and can, through time-share switching, serve more than a dozen missiles in the air at once; the Mk 99 missile fire-control system uses 4 Mk 80 illuminator-directors with SPG-62 radars. The UPX-29 IFF circular antenna array is carried on the mainmast. The Harpoon missiles are in an exposed position at the extreme stern. Bow bulwarks were required to keep decks dry, as draft was increased about one meter over that of the original Spruance design. No fin stabilization is fitted. CG 48's keel was "laid" at Yorktown, Virginia, by President Reagan as part of the ceremonies commemorating the defeat of the British there in 1781; actual structural work commenced 12-81 at Pascagoula, Mississippi.

Modifications to accept newly developed equipments are to be phased in, with the Ingalls yard intended to receive the building contract for the first ship of each new block:

Block 0: CG 47, 48: Basic Aegis Mk 7 system, with SPY-1A, Weapons Control System Mk 1, Standard SM-2 MR Block 1 missiles, the Mk 116 Mod. 4 ASW fire-control system, and the SH-2F LAMPS-I ASW helicopter.

Block 1: CG 49 – 51: The RAST haul-down and deck-maneuvering system is added for SH-60B LAMPS-III helicopters, Standard SM-2 MR Block 2 missiles are carried, Aegis has improved data displays, and the EW suit is enhanced. Both masts tripods vice quadripods.

Block 2: CG 52-55: The Mk 40 Mod. 0 vertical-launch system is substituted for the Mk 26 twin-armed launchers, vertical-launch Tomahawk capability is added, as is an improved LINK II data-link system. As vertical-launch ASROC will not be ready in time, these ships will not receive a launch capability until early 1990s refits. Congress mandated the omission of SPS-49 radars and the SQQ-28 LAMPS-III data link in CG 54-56, but gave permission in 5-84 to add the equipment. CG 54 and 55 will have stand-alone SQR-19 linear towed passive sonar arrays.

Block 3: CG 56 will introduce the SQQ-89 integrated ASW suite, with SQQ-53B hull-mounted sonar, SQR-19 towed array, and the Mk 116 Mod. 6 ASW fire-control system.

Block 4: CG 59 and later: The lighter SPY-1B radar, with improved radiating characteristics, is substituted for SPY-1A, and new computers (UYK-44) will be employed, along with improved displays.

There have been a number of ill-informed criticisms of this class, which is nonetheless the most capable AAW platform in any navy. The ships are not unstable, although quite cramped, and have sufficient stability margin to operate at up to 10,200 tons full load. CG 47 and 48 carry a small amount of lead ballast, but later units will not. The final programmed ship, CG 73, should be delivered in 1994. All carry up to 36 Mk 46 ASW torpedoes.

• 9 Belknap class (SCB 212 type)

| | Bldr | Laid down | L | In serv. |
|--------------------------|--------------------|-----------|----------|----------|
| CG 26 Belknap | Bath Iron Works | 5-2-62 | 20-7-63 | 7-11-64 |
| CG 27 Josephus Daniels | Bath Iron Works | 23-4-62 | 2-12-63 | 8-5-65 |
| CG 28 Wainwright | Bath Iron Works | 2-7-62 | 25-4-64 | 8-1-66 |
| CG 29 JOUETT | Puget Sound NSY | 25-9-62 | 30-6-64 | 3-12-66 |
| CG 30 HORNE | San Francisco NSY | 12-9-62 | 30-10-64 | 15-4-67 |
| CG 31 STERETT | Puget Sound NSY | 25-9-62 | 30-6-64 | 8-4-67 |
| CG 32 WILIAM H. STANDLEY | Bath Iron Works | 29-7-63 | 19-12-64 | 9-7-66 |
| CG 33 Fox | Todd SY, San Pedro | 15-1-63 | 21-11-64 | 28-5-66 |
| CG 34 BIDDLE | Bath Iron Works | 9-12-63 | 2-7-65 | 21-1-67 |

Authorized: Three in FY 61 and six in FY 62



Josephus Daniels (CG 27)

L. & L. Van Ginderen, 8-85



Biddle (CG 34)—with broader 04 level deckhouse than sisters, SPS-40 radar G. Gyssels, 6-84



Wainwright (CG 28)

G. Arra, 1984



William H. Standley (CG 32)

G. Arra, 10-85



Jouett (CG 29) - amidships area

G. Arra, 1984

D: 5,340 light/6,570 std. tons (8,065 fl; CG 26: 8,575) S: 33 kts

Dim: 166.72 × 16.76 × 5.9 (8.8 over sonar)

A: 8/Harpoon SSM (IV \times 2) — 1/Mk 10 Mod. 7 launcher (II \times 1, 40 Standard SM-2 ER and 20 ASROC missiles) — 1/127-mm Mk 42 DP (aft) — 2/20-mm Mk 15 CIWS AA (I \times 2) — 4/12.7-mm mg (I \times 4) — 6/324-mm Mk 32 ASW TT (III \times 2; 18 Mk 46 torpedoes) — 1/SH-2D Sea Sprite LAMPS-I helicopter

Electron Equipt: Radar: 1/LN-66, 1/SPS-10F or SPS-67, 1/SPS-49(V)3 (except CG 31-34: SPS-40), 1/SPS-48C, 2/SPG-55D,

1/SPG-53A Sonar: 1/SQS-26BX (CG 26: SQS-53A, CG 27: SQS-26AXR)

TACAN: SRN-6 or URN-25 EW: SLQ-32(V)3, Mk 36 SRBOC chaff RL (VI × 4)

M: 2 sets GT; 2/6-bladed props; 85,000 hp

Boilers: CG 24, CG 28, CG 32, CG 34: 4 Foster-Wheeler; others: 4 Combustion Engineering; 84 kg/cm², 520°C

Electric: 6,800 kw Range: 2,500/30; 8,000/14

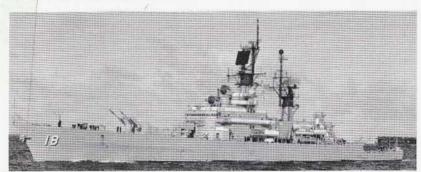
Man: 31 officers, 461 men + flag group: 6 officers, 12 enlisted

Remarks: Formerly typed DLG; classified CG on 1-7-75. CG 26, severely damaged in collision with CV 67 in Mediterranean in November 1975, was out of commission for repairs at Philadelphia until 10-5-80. She had her 76.2-mm guns replaced by 8 Harpoon SSM, received SPS-48C and SPS-49 radar, SM-2 MR missiles, the SLQ-25 Nixie towed torpedo decoy system, improved electronics (including NTDS Mod. 4) and communications gear, and SQS-53A sonar and is now officially considered to be a separate class. In a further refit, from 7-85 to 7-86, the ship is being equipped as 6th Fleet Flagship, with enhanced communications and staff accommodations at the expense of the helicopter hanger. CG 31 was the first to lose her 76.2-mm, in 1976, to make way for eight Harpoon ASM (IV \times 2), now also carried by the others (firing forward to port, aft to starboard). By 1983, all but CG 31 had the Mk 15 gatling CIWS. CG 28 has been used as trials ship for SM-2 ER, now carried by all units of the class. The 127-mm gun is controlled by a Mk 68 radar GFCS, Mk 114 (CG 26: Mk 116) ASW fire-control system, one Mk 11 (CG 26: Mk 14) weapon-direction system, and two Mk 76 Mod. 9 missile fire-control systems. These ships will not receive the SH-60B LAMPS-III ASW helicopter. CG 26, 28, 30, and 31 are scheduled to receive the Tactical Flag Command Center in 1983-85. All will eventually have the SPS-10F replaced by SPS-67, and the SPS-48 updated to SPS-48E; the SYS-2 weapon-control system will be added. Several have enhanced electronics warfare suites, with additional equipment over the SLQ-32(V)3 fit. All are scheduled to receive the NTU (New Threat Upgrade) modernization, with Weapons Direction System Mk 14 and missile tracking set SYR-1 during refits from 1986 to the early 1990s.

• 9 Leahy class (SCB 172 type)

| | Bldr | Laid down | L | In serv. |
|--------------------------|----------------------------|-----------|---------|----------|
| CG 16 LEAHY | Bath Iron Works | 3-12-59 | 1-7-61 | 4-8-62 |
| CG 17 HARRY E. YARNELL | Bath Iron Works | 31-5-60 | 9-12-61 | 2-2-63 |
| CG 18 WORDEN | Bath Iron Works | 19-9-60 | 2-6-62 | 3-8-63 |
| CG 19 DALE | New York SB | 6-9-60 | 28-7-62 | 23-11-63 |
| CG 20 RICHMOND K. TURNER | New York SB | 9-1-61 | 6-4-63 | 13-6-64 |
| CG 21 GRIDLEY | Puget Sound SB & DD Co. | 15-7-60 | 31-7-61 | 25-5-63 |
| CG 22 ENGLAND | Todd SY, Los Angeles | 4-10-60 | 6-3-62 | 7-12-63 |
| CG 23 Halsey | San Francisco NSY | 26-8-60 | 15-1-62 | 20-7-63 |
| CG 24 Reeves | Puget Sound NSY | 1-7-60 | 12-5-62 | 15-5-64 |

Authorized: 3 in FY 58, 6 in FY 59



Worden (CG 18)

LSPH E. Pitman, R.A.N., 7-85

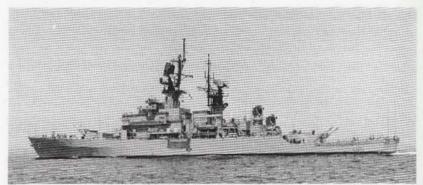


Harry E. Yarnell (CG 17) — CIWS, SPS-43 radar, and SLQ-32 EW suite with Harpoon, Vulcan/Phalanx L. & L. Van Ginderen, 3-84



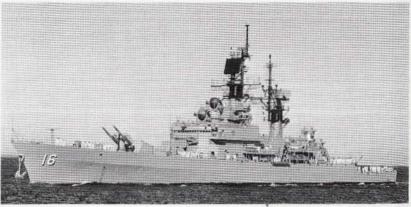
Reeves (CG 24)

LSPH E. Pitman, R.A.N., 9-85



Gridley (CG 21) - enlarged superstructure amidships

G. Arra, 11-85



Leahy (CG 16)

LSPH E. Pitman, R.A.N., 4-85

D: 6,070 tons (8,200 ft) S: 33 kts Dim: 162.46 × 16.15 × 5.9 (7.9 over sonar)

A: 8/Harpoon SSM (IV × 2) — 2/Mk 10 launchers (II × 2, 80 Standard SM-2
ER missiles) — 2/20-mm Mk 15 CIWS AA (I × 2) — 4/12.7-mm mg (I × 4) —
1/Mk 116/ASROC ASW RL (VIII × 2) — 6/324-mm Mk 32 ASW TT (III × 2)
Electron Equipt: Radar: 1/LN-66, 1/SPS-10F or SPS-67, 1/SPS-49(V)3, (CG
20, 24: SPS-37), 1/SPS-48A, 4/SPG-55B
Sonar: SQS-23 (CG 17: SQQ-23B PAIR, single-dome)

TACAN: SRN-6 or URN-25 EW: SLQ-32(V)3, Mk 36 SRBOC chaff RL (VI \times 4) (CG 21,

23, 24: WLR-1, WLR-3 also)
M: CG 16 to CG 19: 2 sets G.E., CG 20 to CG 22: 2 sets de Laval, CG 23 and CG 24: 2 sets Allis Chalmers GT; 2/5-bladed props; 85,000 hp

Boilers: CG 16 to CG 20: 4 Babcock & Wilcox; others: 4 Combustion Engineering; 84 kg/cm², 520°C

Electric: 6,800 kw Fuel: 1,800 tons Range: 2,500/30; 8,000/14 Man: 27-31 officers, 366-376 men + flag group: 6 officers, 12 men

Remarks: These are former DLGs, classified CG on 1-7-75. During overhauls 1967-72, the Leahy-class ships received an advanced version of the Mk 76 missile fire-control system, permitting firing of Standard SM-1 ER missiles. CG 16 was the first to complete this overhaul and returned to active service on 17-8-68. All had received SM-2 ER missile capability by 1985. The four 76.2-mm (II × 2) guns have been removed from all, and their gun tubs are used as locations for Harpoon missile launchers. Like CGN 25, these ships are, unfortunately, completely devoid of larger gun armament. There are no reloads for the ASROC system. CG 19 received SPS-49 in place of SPS-43 in 1976; the others were similarly re-equipped, and all now have the

SLQ-32 (V)3 EW system, with CG 21 and CG 24 also retaining the older WLR-1 and WLR-3 equipment, updated. Mk 76 missile fire-control system, with 4 SPG-55B radar trackers/illuminators. Mk 114 ASW fire control, Mk 14 weapons-control system. All have NTDS data system and WSC-3 SATCOMM equipment.

Note: The Albany-class guided-missile cruiser Albany (CG 10, ex-CA 123), in reserve since 29-8-80, was stricken 30-6-85 for possible museum use; sister Chicago (CG 11, ex-CA 136) was stricken 31-1-84. Galveston-class guided-missile cruiser Oklahoma City (CG 5, ex-CL 91), stricken 15-12-79 but retained in partial preservation at Bremerton, is to be used as a museum or as a target.

HEAVY CRUISERS

◆ 2 Des Moines class - In reserve

| | Bldr | Laid down | L | In serv. |
|-------------------|-----------------------|-----------|---------|----------|
| CA 134 DES MOINES | Bethlehem, Fore River | 28-5-45 | 27-9-46 | 16-11-48 |
| CA 139 SALEM | Bethlehem, Fore River | 4-7-45 | 25-3-47 | 14-5-49 |



The stricken Newport News (ex-CA 148) moored outboard Des Moines (CA 134) and Salem (CA 139) at Philadelphia Naval Shipyard A.D. Baker, 8-84

D: 17,225 tons (21,470 fl) **S:** 32 kts **Dim:** 218.42 (213.36 wl) \times 22.96 \times 7.5 **A:** 9/203-mm (III \times 3) — 12/127-mm DP (II \times 6) — 20–22/76.2-mm DP (II \times 10 or 11)

Electron Equipt: Radar: 1/SG-6, 1/SPS-8, 1/SPS-6C (CA 139: SPS-12), 2/Mk 13, 4/Mk 25, 4/Mk 35 (CA 139: 2/Mk 34 also) TACAN: URN-6

M: 4 sets GT; 4 props; 120,000 hp Electric: 7,700 kw

Boilers: 4 Babcock & Wilcox; 43.9 kg/cm2, 454°C

Armor: Belt: 102-152-mm; Upper deck: 25-mm; Lower deck: 85-mm; Turrets: 203-mm face, 95-mm sides, 102-mm roof; Barbettes: 160-mm; Conning Tower: 102-160-mm; Steering Room: 96-160-mm

Fuel: 2,600 tons Range: 8,000/15 Man: 105 officers, 1,745 men (wartime)

Remarks: CA 139 to reserve on 30-1-59, CA 134 on 14-7-61, both at Philadelphia. Sister Newport News (CA 148), in reserve since 27-6-75, was stricken on 30-6-78 but has remained at Philadelphia as a possible source of spares. CA 134 has ten twin 76.2-mm Mk 34 DP mounts, her sister has eleven. Each has two Mk 54 directors (with Mk 13 radar) for the 203-mm guns, four Mk 37 fire-control systems for the 127-mm guns, and four Mk 56 and Mk 63 fire-control systems for the 76.2-mm guns. Magazines can carry 1,350 rounds 203-mm, 6,060 rounds 127-mm, 12,000 rounds 76.2-mm. All radar antennas have been removed for storage. To be retained for possible reactivation as naval gunfire support ships; are in excellent condition but have badly outdated electronics.

GUIDED-MISSILE DESTROYERS

♦ 0 (+1+6282) Arleigh Burke class

| DDG 51 Arleigh Burke | Bldr Bath Iron Wks. | Laid down 14-12-87 | L 21-8-88 | In serv. 10-89 |
|----------------------|------------------------|-----------------------|--------------|-------------------|
| DDG 52 N | | *** | | |
| DDG 53 N | | | | |
| DDG 54 N | | | | |

Authorized: DDG 51 in FY 85; programmed: 3/yr FY 87-FY 90, 5/yr thereafter

D: 6,609 tons light (8,300 fl) S: 30+ kts

Dim: $153.77 (142.03 \text{ wl}) \times 20.40 (18.0 \text{ wl}) \times 6.09 (9.32 \text{ over sonar})$

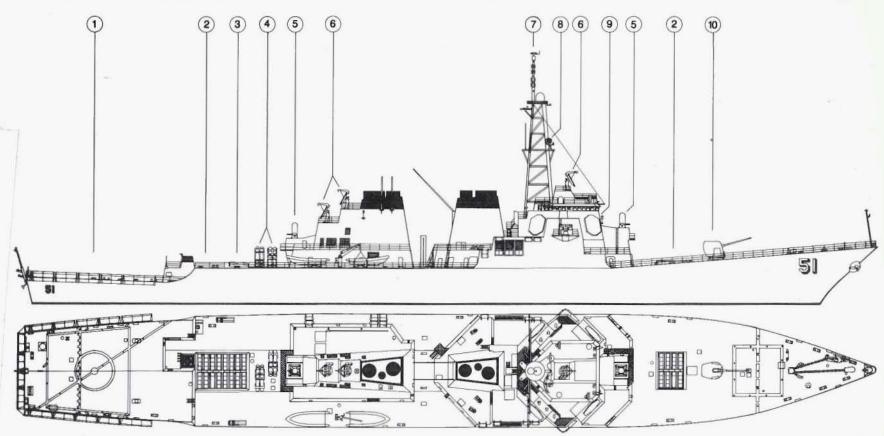
A: 2 Mk 41 Mod. 0 vertical-launch groups (1/64-cell, 1/32-cell; 90 Standard SM-2 MR Block 2, ASROC and Tomahawk missiles) —8/Harpoon SSM (IV \times 2) —1/127-mm Mk 45 Mod. 1 DP —2/20-mm Mk 15 CIWS AA (I \times 2) —6/324-mm Mk 32 ASW TT (III \times 2)

Electron Equipt: Radar: 1/SPS-64, 1/SPS-67, 1/SPY-1D, 3/SPG-62 Sonar: SQS-53C, SQR-19 towed array



Arleigh Burke (DDG 51) -- late 1984 concept

V. Piecyk/RCA, 11-84

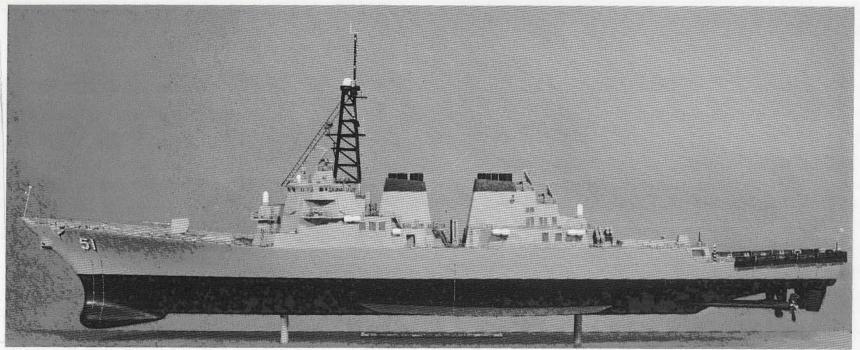


Arleigh Burke (DDG 51)

A.D. Baker

1. helicopter deck 2. Mk 41 vertical-launch missile system (VLS) 3. Mk 32 triple ASW TT 4. Harpoon SSM 5. Mk 15 CIWS 20-mm AA 6. SPG-62 radars for Mk 99 illuminator system 7. URN-25 TACAN 8. SPS-67 radar (SPS-64 to port) 9. SPY-1D radar 10. 127-mm Mk 45 DP

GUIDED-MISSILE DESTROYERS (continued)



Arleigh Burke (DDG 51) - design model





Arleigh Burke (DDG 51) - design model

RCA, 4-85



Arleigh Burke (DDG 51) — design model

RCA, 4-85

EW: SLQ-32(V)2, Mk 36 SRBOC chaff RL (VI × 4) TACAN: URN-25—IFF: UPX-29

M: 4 G.E. LM-2500-30 gas turbines; 2/5-bladed CP props; 100,000 hp **Electric:** 7,500 kw

Fuel: . . . Range: 4,400/20 Man: 303 tot. (23 officers, 280 men)

Remarks: This design, overly long in development, is intended to provide a generalpurpose destroyer capable of carrying out its assignments in the threat environment of the 1990s and beyond. The ships will have steel superstructures and the first comprehensive CBR protection system in a U.S. Navy ship. Over 130 tons of armor will be used for vital spaces. Congress has forced development of the RACER (Rankine-Cycle Energy Recovery) system, to provide cruising power by using the waste heat from one of the gas turbines to generate about 8,000 propulsion horsepower; it will not be incorporated until at least the 10th ship and may not be used at all. With or without RACER, the ships will have considerably reduced endurance as compared to other recent USN destroyers. The hull form is unusually broad in relation to length; fin stabilizers are not planned.

The flight deck will accept the SH-60B/F Seahawk helicopter, and the SQQ-28 LAMPS-III data-link/control system will be installed. The SLQ-25 Nixie towed torpedo decoy system will be carried.

The Aegis SPY-1D will have all four faces mounted on the forward superstructure; the system will employ 5 UYK-43B computers, and the Combat Information Center will be below the main deck. The gun will be controlled by the Mk 160 Mod. 4 GFCS (which uses radar input data from the SPS-67 or SPY-1D); the planned Mk 121 Mod. 0 Seafire t.v./laser/infrared director has been canceled but may be replaced by a less-costly system. The gun will have no AA capability and will be furnished with a probable 600 rounds of ammunition. The Standard SM-2 MR Block 2 missiles will be controlled by the Aegis system, using the three Mk 80 illuminators for terminal designation only. The Mk 116 Mod. 7 ASW f.c.s. will be carried. WSC-3 satellite communications and Links 11 and 14 will be fitted.

It is planned to have two or three shipyards participate in the *Arleigh Burke*-class program, with at least the first 29 ships to be built to the design described above. The first unit will cost about \$1.1 billion FY 83 dollars, with follow-up ships tightly constrained to not more than \$700 million each. The contract for the first unit was signed 2-4-85.

| 4 Kidd class | Bldr: Ingalls, Pascagoula | Authorized | l: FY 79 Supplemental |
|----------------------------------|---------------------------|------------|-----------------------|
| | Laid d | own L | In serv. |

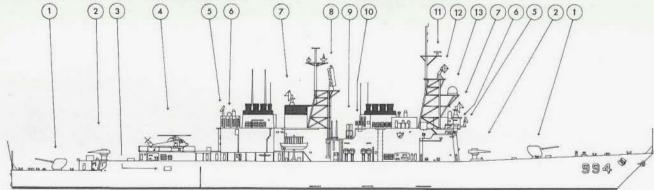
| | Laid down | 11 | III SELV. |
|------------------------------------|-----------|---------|-----------|
| DDG 993 Kidd (ex-Kouroush) | 26-6-78 | 11-8-79 | 27-6-81 |
| DDG 994 CALLAGHAN (ex-Daryush) | 23-10-78 | 1-12-79 | 29-8-81 |
| DDG 995 Scott (ex-Nader) | 12-2-79 | 1-3-80 | 24-10-81 |
| DDC 996 CHANDLED (Av. Anduchiruan) | 7-5-79 | 24-5-80 | 13-3-89 |



Chandler (DDG 996)

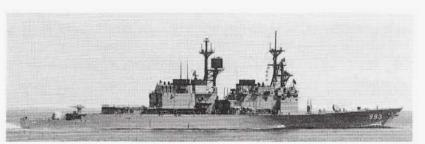
LSPH E. Pitman, R.A.N., 6-84

GUIDED-MISSILE DESTROYERS (continued)



Kidd (DDG 993)

1. 127-mm Mk 45 DP gun 2. Mk 26 guided-missile launcher 3. ports for Mk 32 ASW TT (III \times 2) 4. SH-2F helicopter 5. OE-82 UHF SATCOMM antennas 6. Mk 15 CIWS 7. SPG-51D missile-control radar 8. SPS-48C 3-D radar 9. Harpoon SSM (IV \times 2) 10. SLQ-32(V)2 array 11. SPS-55 radar 12. SPG-60 radar gun director 13. SPQ-9A radar gun director



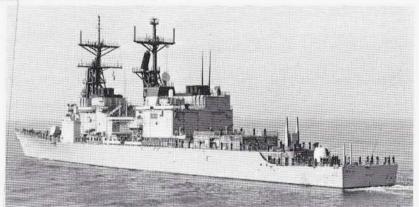
Kidd (DDG 993)

G. Arra, 1982



Callaghan (DDG 994) - with Mk 15 CIWS, URN-25 TACAN

G. Arra, 10-85



Scott (DDG 995)

L. & L. Van Ginderen, 6-84

D: 9,574 tons (fl) **S**: 30+ kts

Dim: 171.7 (161.23 wl) × 16.76 × 7.01 (10.06 over sonar)

A: 1/Mk 26 Mod. 3 and 1/Mk 26 Mod. 4 launcher (II \times 2, 52 Standard SM-1 MR and 16 ASROC missiles) — 8/Harpoon SSM (IV \times 2) — 2/127-mm Mk 45 DP (I \times 2) — 2/20-mm Mk 15 CIWS AA (I \times 2) — 4/12.7-mm mg (I \times 4) — 6/324-mm Mk 32 ASW TT (III \times 2; 24 torpedoes) — 1/SH-SF LAMPS-I ASW helicopter

Electron Equipt: Radar: 1/SPS-53, 1/SPS-55, 1/SPS-48C, 2/SPG-51D, 1/SPG-60, 1/SPQ-9A

Sonar: SQS-53A — TACAN: URN-25 EW: SLQ-32(V)2, Mk 36 SRBOC chaff RL (VI × 4) M: 4 G.E. LM-2500 gas turbines; 2/5-bladed CP props; 86,000 hp Electric: 6,000 kw Range: 3,300/30; 6,000/20 Man: 32 officers, 332 men

Remarks: The original order for these superb ships placed with the U.S. Navy by Iran in 1974 was for six; two were canceled before the order to Ingalls Shipbuilding for the remaining four was issued on 23-3-78. DDG 993 and DG 994 were canceled by the new Iranian government on 3-2-79, and the other pair shortly thereafter. Their completion for the U.S. Navy was authorized by the U.S. Congress under a Fiscal 1979 Supplementary Appropriation Act. At approximately \$510 million each, they represented a considerable bargain. The first two were to have been numbered DD 995 and DD 996; the new numbers do not fit in USN hull-numbering sequence for guided-missile destroyers.

The capability to control Standard SM-2 MR missiles will be backfitted at a later date, and the ships are planned to receive the NTU (New Threat Upgrade) modernization. Two Mk 74 missile fire-control systems (with SPG-55D radar tracker/illuminators) are carried, as well as the Mk 86 Mod. 5 gunfire-control system, which uses the SPQ-9A radar for surface fire and the SPG-60 for AA (the latter can also be used as a missile illuminator). The ASROC missiles are carried in the larger Mk 26 Mod. 1 missile-launch system's magazine, which is aft; the Mk 116 underwater battery fire-control system is carried. SLQ-25 Nixie towed anti-torpedo decoys are fitted; the ships were not intended to have the SQR-19A TACTASS towed passive sonar array, but it may be backfitted later. During post-commissioning yard periods, URN-25 TACAN replaced URN-20, Harpoon was added amidships, and two Vulcan/Phalanx MK 15 CIWS were installed.

These ships were given better air-intake filter systems than the U.S. Spruance class has, in order to handle the dust and sand prevailing in Iranian operating areas. They also have greater air-conditioning capacity. These features should make them invaluable for duties in the Indian Ocean. The Iranian Navy planned to type them as cruisers. Full-load displacement has grown by over 1,000 tons above the original plan, partly as a result of additional Kevlar and aluminum-alloy armor being added.

◆ 23 Charles F. Adams class (SCB 155 type) (modified ships*)

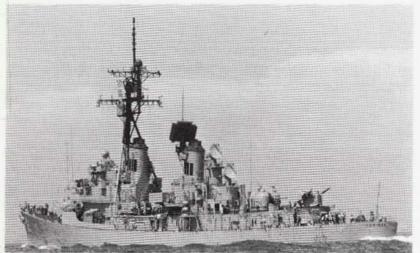
| | Bldr | Laid down | L | In serv. |
|--|---------------------|-----------|----------|----------|
| DDG 2 CHARLES F. ADAMS | Bath Iron Works | 16-6-58 | 8-9-59 | 10-9-60 |
| DDG 3 John King | Bath Iron Works | 25-8-58 | 30-1-60 | 4-2-61 |
| DDG 4 LAWRENCE | New York SB | 27-10-58 | 27-2-60 | 6-1-62 |
| DDG 5 CLAUDE V. RICKETTS (ex-Biddle) | New York SB | 18-5-59 | 16-4-60 | 5-5-62 |
| DDG 6 BARNEY | New York SB | 18-8-59 | 10-12-60 | 11-8-62 |
| DDG 7 HENRY B. WILSON | Defoe SB | 28-2-58 | 22-4-59 | 17-12-60 |
| DDG 7 HENRY B. WILSON DDG 8 LYNDE McCormick | Defoe SB | 4-4-58 | 9-9-60 | 3-6-61 |
| DDG 8 LYNDE MCCORMICK | Todd, Seattle | 1-4-58 | 23-4-59 | 24-6-61 |
| DDG 9 TOWERS DDG 10 SAMPSON | Bath Iron Works | 2-3-59 | 9-9-60 | 24-6-61 |
| DDG 10 SAMPSON DDG 11 SELLERS | Bath Iron Works | 3-8-59 | 9-9-60 | 28-10-61 |
| DDG 11 SELLERS DDG 12 ROBISON | Defoe SB | 23-4-59 | 27-4-60 | 9-12-61 |
| DDG 12 ROBISON DDG 13 HOEL | | 1-6-59 | 4-8-60 | 16-6-62 |
| 1 1 1 5 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Defoe SB | 23-4-59 | 11-5-60 | 7-2-62 |
| DDG 14 BUCHANAN | Todd, Seattle | | 29-7-61 | 15-12-62 |
| DDG 15 BERKELEY | New York SB | 1-6-60 | | |
| DDG 16 JOSEPH STRAUSS | New York SB | 27-12-60 | 9-12-61 | 20-4-63 |
| DDG 17 Conyngham | New York SB | 1-5-61 | 19-5-62 | 13-7-63 |
| DDG 18 Semmes | Avondale SY | 18-8-60 | 20-5-61 | 10-12-62 |
| DDG 19 TATTNALL* | Avondale SY | 14-11-60 | 26-8-61 | 13-4-63 |
| DDG 20 Goldsborough* | Puget Sound SB & DD | 3-1-61 | 15-12-61 | 9-11-63 |
| DDG 21 COCHRANE | Puget Sound SB & DD | 31-7-61 | 18-7-62 | 21-3-64 |
| DDG 22 Benjamin Stoddert* | Puget Sound SB & DD | 11-6-62 | 8-1-63 | 12-9-64 |
| DDG 23 RICHARD E. BYRD | Todd, Seattle | 12-4-61 | 6-2-62 | 7-3-64 |
| DDG 24 WADDELL | Todd, Seattle | 6-2-62 | 26-2-63 | 28-8-64 |

Authorized: 8 in FY 57, 5 in FY 58, 5 in FY 59, 3 in FY 60, and 2 in FY 61

GUIDED-MISSILE DESTROYERS (continued)



Tattnall (DDG 19) — modernized, with Mk 86 GFCS and other new electronics, but with no ASROC reload magazine G. Arra, 2-85



Robison (DDG 12) — Mk 11 launcher, SPS-40 radar, SLQ-32(V)2 EW, old TACAN G. Arra, 1984



Berkeley (DDG 15)—note two helicopter "VERTREP" areas outlined aft on deck G. Arra, 1984



Richard E. Byrd (DDG 23) — Mk 13 launcher, SPS-40 radar, ASROC reload magazine, bow anchor, SLQ-32(V)2 EW L. & L. Van Ginderen, 3-85



Cochrane (DDG 21)—with old TACAN, SLQ-32(V)2 EW, SPS 40, and 2 navigational radars

LSPH E. Pitman, R.A.N., 9-85

D: 3,570 tons light (4,825 fl) S: 31.5 kts

Dim: 133.19 (128.0 wl) × 14.32 × 6.1 (8.3 over sonar)

A: 1/Mk 11 twin missile launcher or, beginning with DDG 15, 1/Mk 13 single launcher (4-6 Harpoon and 34-36 Standard SM-1 MR missiles) — 2/127-mm Mk 42 DP (I × 2) — 4/12.7 mm mg (I × 4) — 1/Mk 116 ASROC ASW RL (VIII × 1; 8 or 12 missiles) — 6/324-mm Mk 32 ASW TT (III × 2)

Electron Equipt: Radar: 1/SPS-10F, 1/SPS-40B/D, 1/SPS-52B, 2/SPG-51C, 1/SPG-53A (DDG 19, 20, 22: 1/LN-66, 1/SPS-10D, 1/SPS-40D, 1/SPS-52C, 1/SPQ-9A, 2/SPG-51D, 1/SPG-60)

Sonar: SQQ-23A or 1/SQS-23A (hull-mounted in DDG 2 to DDG 19: bow-mounted in DDG 20 to DDG 24)
EW: SLQ-32(V)2, SLQ-20, Mk 36 SRBOC (VI × 4)
TACAN: URN-25 or SRN-6

M: 2 sets GT; 2 props; 70,000 hp Electric: 2,200 kw (DDG 19, 20, 22; 3,000 kw) Boilers: 4; 84 kg/cm², 520°C Fuel: 900 tons Range: 1,600/30; 6,000/14 Man: 20-24 officers, 319-330 men

Remarks: Sisters DDG 25, DDG 26, and DDG 27, built at the Defoe Shipbuilding Company, Bay City, Michigan, were ordered by Australia; DDG 28, DDG 29, and DDG 30 were built at Bath Iron Works for the West German Navy. Ships with bow-mounted sonars have stem-mounted anchors. Many have been backfitted with an ASROC ASW missile reload magazine (with 4 missiles) beside the forward stack, to starboard. It was planned to give these ships a badly needed modernization, beginning with DDG 3 under FY 80. Costs rose enormously, and the program was cut to ten, permitting them to operate for another fifteen to twenty years. Congressional reluctance to spend \$221 million per ship (then equal to the cost of a new FFG 7-class frigate) forced cancellation of even the reduced program.

The full modernization program was finally cut to only three ships: DDG 19, 20, and 22. DDG 19 underwent conversion 31-8-81 to 28-11-82 at Philadelphia; DDG 20 and 22 converted at Pearl Harbor 4-83 to 7-84 and 4-84 to 8-85. Changes include: replacement of the Mk 68 GFCS with Mk 86 Mod. 8 (with 1/SPQ-9A and 1/SPG-60 radar); SLQ-32(V)2, SLQ-20, and Mk 36 SRBOC replacing the original suite; the original missile f.c.s. replaced by Mk 74 Mod. 4, with the Weapons Direction System Mk 13 Mod. 4 replacing the original Mk 4; the addition of the SYS-1 data system with UYA-4 NTDS; upgrading the search radar suite to: 1/LN-66, 1/SPS-10D, 1/SPS-40D, and SPS-52C; improving the communications suite; and increasing the output of the four generator sets to 750 kw each. The ships can direct 3 Standard missiles simultaneously, using the SPG-60 and the two SPG-51D tracker/illuminators.

The non-conversion ships are also being upgraded during regular overhauls: SPS-40 has replaced the SPS-37 originally fitted to the first 13 ships in at least 8 units to date; SLQ-32(V)2 is replacing the WLR-1F and ULQ-6B suite, and Mk 36 SRBOC chaff launchers are being added; URN-25 lightweight TACAN is replacing SRN-6; the Mk 68 GFCS is receiving a digital computer system in DDG 4-6, 8-12, 15, 18, and 21; SPS-39A radars have been replaced by SPS-52B in nearly all, and other improvements are being made to the communications suites. Only four ships have the SQQ-23 sonar.

In ships with Mk 11 launchers, 4 Harpoons are carried; in Mk 13-equipped ships, 6 are carried. Several carry one or more small navigational radars.

♦ 10 Coontz class (SCB 142/149 type)

| | Bldr | Laid down | L | In serv. | |
|---------------------------------|-----------------------------|-----------|----------|----------|--|
| DDG 37 FARRAGUT (ex-DLG 6) | Bethlehem Steel (Quincy) | 3-6-57 | 18-7-58 | 12-10-60 | |
| DDG 38 Luce (ex-DLG 7) | Bethlehem Steel (Quincy) | 1-10-57 | 11-12-58 | 20-5-61 | |
| DDG 39 Macdonough (ex-DLG 8) | Bethlehem Steel (Quincy) | 15-4-58 | 9-7-59 | 4-11-61 | |
| DDG 40 COONTZ (ex-DLG 9) | Puget Sound NSY | 1-3-57 | 6-12-58 | 15-7-60 | |

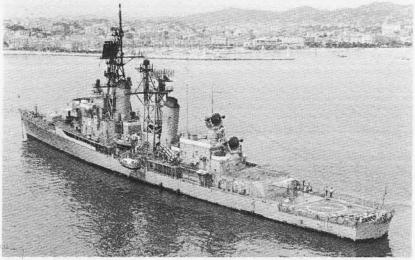
GUIDED-MISSILE DESTROYERS (continued)

| DDG 41 King (ex-DLG 10) | Puget Sound NSY | 1-3-57 | 6-12-58 | 17-11-60 |
|--|----------------------|----------|----------|----------|
| DDG 42 Mahan (ex-DLG 11) | San Francisco NSY | 31-7-57 | 7-10-59 | 25-8-60 |
| DDG 43 DAHLGREN (ex-DLG 12) | Philadelphia NSY | 1-3-58 | 16-3-60 | 8-4-61 |
| DDG 44 WILLIAM V. PRATT (ex-DLG 13) | Philadelphia NSY | 1-3-58 | 16-3-60 | 4-11-61 |
| DDG 45 DEWEY (ex-DLG 14) | Bath Iron Works | 10-8-57 | 30-11-58 | 7-12-59 |
| DDG 46 PREBLE (ex-DLG 15) | Bath Iron Works | 16-12-57 | 23-5-59 | 9-5-60 |
| Authorized: DDG 37 to 42 in F | Y 57, DDG 43 to 46 | in FY 57 | | |



Mahan (DDG 42) — New Threat Upgrade trials ship, with SPS-48E radar, SM-2 ER missiles, etc.

G. Arra, 8-84



Dahlgren (DDG 43)

Pradignac & Leo, 1982



Macdonough (DDG 39) - with SLQ-32, but still with SPS-37

G. Arra, 8-85



Coontz (DDG 40)

G. Arra, 1984

D: 4,700 tons (5,960-6,150 fl) S: 34 kts Dim: 156.21 × 16.0 × 7.6 (max.)

A: 8/Harpoon SSM (IV × 2) — 1/Mk 10 Mod. 0 twin launcher (II × 1, 40
Standard SM-1 ER missiles) — 1/127-mm Mk 42 automatic DP — 4/12.7-mm
mg (I × 4) — 1/ASROC ASW RL (VIII × 1) — 6/324-mm ASW TT (III × 2)

Electron Equipt: Radar: 1/SPS-53 or Raytheon 2900, 1/SPS-10B, 1/SPS-49,
1/SPS-48C (48E in DDG 42), 2/SPG-55B, 1/SPG-53A

Sonar: SQS-23 PAIR TACAN: SRN-6

EW: SLQ-32(V)2, Mk 36 SRBOC (VI × 4)

M: DDG 37 to 39, DDG 45: 2 sets de Laval GT; others: 2 sets Allis-Chalmers GT; 2 props; 85,000 hp

Boilers: 4 Foster-Wheeler (Babcock & Wilcox in DDG 40 to DDG 46); 84 kg/cm², 520°C

Electric: 4,000 kw Fuel: 900 tons Range: 1,500/30; 6,000/14 Man: 21 officers, 356 men + flag group: 7 officers, 12 men

Remarks: These are the only destroyers with Standard SM-1 ER. Reclassified DDG from DLG 6 to DLG 15 in 1975. All modernized between 1970 and 1977 with Standard SM-1 ER missiles, NTDS (fitted earlier in DDG 40, DDG 41), SPS-48 radar, etc.; four 76.2-mm DP (II imes 2) removed and Harpoon launchers installed in their former locations (firing forward to port, aft to starboard). DDG 37, the first to be modernized, received an ASROC reload magazine forward of the bridge and a taller after mast; to save weight and cost, the others were not similarly equipped. Missile fire control is Mk 76. A Mk 68 fire-control system is carried for the 127-mm gun. DDG 40 carried two Vulcan gatling guns (not Phalanx) in 1975. DDG 41 conducted Mk 15 CIWS Vulcan/ Phalanx 20-mm gatling AA sea trials in 1973-74, before she was modernized; however, the ships will not receive two Vulcan/Phalanx, due to their age, space, and weight problems. Mk 111 Mod. 8 ASW fire-control systems and satellite-communications antenna systems in all units. The SQQ-23A PAIR sonar installed uses two separate domes. Helicopter landing pad on stern. The SPS-49 2-D air-search radar had replaced SPS-37 and the SLQ-32(V)2 EW system had replaced WLR-1, WLR-11, and ULQ-6B in nearly all by 1985.

DDG 42 is trials ship for the NTU (New Threat Upgrade) refit, with the SPS-48E 3-D radar, SPS-49(V)5 2-D radar, the SYS-2 IADT (Integrated Automatic Target Detection and Tracking) computerized action information system, Weapons Direction System Mk 14, and Standard SM-2 ER Block 2 missiles. The suite will not be backfitted to the others.

Note: Of the four *Decatur*-class guided-missile destroyers, *Parsons* (DDG 33, ex-DD 949), decommissioned 19-11-82, was stricken 15-5-84 and *John Paul Jones* (DDG 32, ex-DD 932), decommissioned 15-12-82, was stricken 30-11-85. *Decatur* (DDG 31, ex-DD 936), decommissioned 30-6-83, and *Somers* (DDG 34, ex-DD 947), decommissioned 19-11-82, remained on the Navy List at the end of 1985, awaiting striking and cannibalization.

DESTROYERS

◆ 31 Spruance class (SCN 275 type) Bldr: Ingalls SB, Pascagoula, Miss. (Litton Industries)

| | Laid down | L | In serv. |
|--------------------------|-----------|----------|----------|
| DD 963 SPRUANCE | 17-11-72 | 10-11-73 | 20-9-75 |
| DD 964 PAUL F. FOSTER | 6-2-73 | 23-2-74 | 21-2-76 |
| DD 965 Kinkaid | 19-4-73 | 25-5-74 | 10-7-76 |
| DD 966 Hewitt | 23-7-73 | 24-8-74 | 25-9-76 |
| DD 967 Elliot | 15-10-73 | 19-12-74 | 22-1-76 |
| DD 968 ARTHUR W. RADFORD | 14-1-74 | 1-3-75 | 16-4-77 |
| DD 969 Peterson | 29-4-74 | 21-6-75 | 9-7-77 |
| DD 970 CARON | 1-7-74 | 24-6-75 | 1-10-77 |
| DD 971 DAVID R. RAY | 23-9-74 | 23-8-75 | 19-11-77 |
| DD 972 Oldendorf | 27-12-74 | 21-10-75 | 4-3-78 |
| DD 973 John Young | 17-2-75 | 7-2-76 | 20-5-78 |
| DD 974 COMTE DE GRASSE | 4-4-75 | 26-3-76 | 5-8-78 |
| DD 975 O'BRIEN | 9-5-75 | 8-7-76 | 3-12-77 |
| DD 976 Merrill | 16-6-75 | 1-9-76 | 11-3-78 |
| DD 977 Briscoe | 21-7-75 | 15-12-76 | 3-6-78 |
| DD 978 Stump | 25-8-75 | 29-1-77 | 19-8-78 |
| DD 979 Conolly | 29-9-75 | 19-2-77 | 14-10-78 |
| DD 980 Moosbrugger | 3-11-75 | 23-7-77 | 16-12-78 |
| DD 981 John Hancock | 16-1-76 | 29-10-77 | 10-3-79 |
| DD 982 Nicholson | 20-2-76 | 11-11-77 | 12-5-79 |
| DD 983 John Rodgers | 12-8-76 | 25-2-78 | 14-7-79 |
| DD 984 Leptwich | 12-11-76 | 8-4-78 | 25-8-79 |

DESTROYERS (continued)

| DD 985 Cushing | 2-2-77 | 17-6-78 | 22-9-79 |
|----------------------|----------|----------|----------|
| DD 986 HARRY W. HILL | 1-4-77 | 10-8-78 | 10-11-79 |
| DD 987 O'BANNON | 24-6-77 | 25-9-78 | 1-12-79 |
| DD 988 Thorn | 29-8-77 | 22-11-78 | 12-1-80 |
| DD 989 DEYO | 14-10-77 | 20-1-79 | 22-3-80 |
| DD 990 INGERSOLL | 5-12-77 | 10-3-79 | 12-4-80 |
| DD 991 Fife | 6-3-78 | 1-5-79 | 31-5-80 |
| DD 992 FLETCHER | 24-4-78 | 16-6-79 | 12-7-80 |
| DD 997 HAYLER | 20-10-80 | 2-3-82 | 5-3-83 |
| | | | |

Authorized: D 963-965 in FY 70, DD 966-971 in FY 71, DD 972-978 in FY 72, DD 979-985 in FY 74, Dd 986-992 in FY 75, DD 997 in FY 78



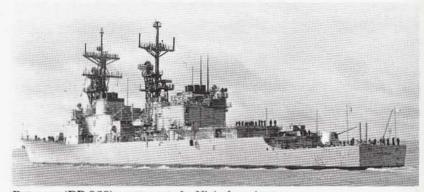
David R. Ray (DD 971)—prototype RAM launcher on starboard quarter, WLR-1 and SLQ-32 EW arrays, TAS Mk 23 and Mk 15 CIWS added G. Arra, 1-85



John Young (DD 973)—still with old TACAN, but with Mk 15 CIWS and Mk 23 TAS added L. & L. Van Ginderen, 3-85



John Hancock (DD 981) — Mk 23 TAS and two Mk 15 CIWS added, URN-25 TACAN replaced SRN-6 Ingalls SB, 8-85

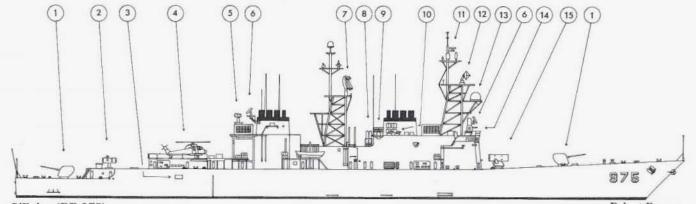


Peterson (DD 969) — note ports for Nixie decoy in stern L. & L. Van Ginderen, 10-85



Oldendorf (DD 972)

LSPH E. Pitman, R.A.N., 9-85



O'Brien (DD 975)

Robert Dumas
1. 127-mm Mk 45 DP 2. Octuple Mk 29 Sea Sparrow launcher 3. Shutters over triple Mk 32 ASW TT 4. SH-2F LAMPS-I helicopter 5. radar director for Mk 91 Mod. 0 Sea Sparrow 6. OE-82 UHF SATCOMM antenna 7. SPS-40 air-search radar 8. quadruple Harpoon canister launcher mounting 9. SLQ-32(V)2 EW array 10. Mk 137 launchers for Mk 36 Super RBOC decoy system 11. SPS-55 surface-search radar 12. SPG-60 radar gun director 13. SPQ-9A radar gun director radome 14. Mk 15 CIWS 20-mm gatling AA 15. Mk 112 ASROC ASW missile launcher

DESTROYERS (continued)



Comte de Grasse (DD 974) - with two 4-round Tomahawk ABL flanking the ASROC launcher Ingalls SB, 1985



John Rodgers (DD 983) - post-overhaul, with Tomahawk ABL abreast ASROC, D/F ESM array atop foremast, no Mk 15 CIWS Ingalls SB, 1985



Moosbrugger (DD 980) - SQQ-89 trials ship, with SSQ-28 LAMPS-III helo data link antenna radome on foremast platform Ingalls SB, 9-85



Cushing (DD 985)

L. & L. Van Ginderen, 10-84

D: 5,916 tons light (8,040 fl) S: 32.5 kts

Dim: 171.68 (o.a.) (161.25 pp) × 16.76 × 5.79 (8.84 over sonar)

A: 8/Harpoon SSM (IV × 2) - 1/Mk 29 launcher (VIII × 1, 24 Sea Sparrow) -2/127-mm Mk 45 DP (I × 2) — 2/20-mm Mk 15 CIWS (I × 2) — 4/12.7-mm mg (I \times 4) - 1/Mk 116 ASROC ASW RL (VIII \times 1, 24) - 6/324-mm Mk 32 ASW TT (III × 2; 18 Mk 46 torpedoes) — 1/SH-2F LAMPS-I (DD 989: SH-60B LAMPS-III) ASW helicopter

Electron Equipt: Radar: 1/SPS-55, 1/SPS-40 B/C/D (DD 997: SPS-49)

1/SPQ-9A, 1/SPG-60, 1/Mk 91 Mod. 0; Mk 23 TAS in 14 or more ships

Sonar: 1/SQS-53A (DD 980: SQS-53B and SQR-19 TASS) TACAN: URN-25 or URN-20

EW: SLQ-32(V)2, Mk 36 SRBOC chaff RL (VI × 4); DD 971, 975: WLR-1 also

M: 4 G.E. LM-2500 gas turbines; 2 CP props; 86,000 hp (80,000 sust.)

Electric: 6,000 kw Fuel: 1,650 tons

Range: 3,300/30; 6,000/20; 8,000/17 Man: 18 officers, 232 men (296 tot. accom.)

REMARKS: Largest post-World War II U.S. destroyer program, and the first non-SAM destroyers ordered since the 1950s. DD 997 intended by Congress to be of an "air-capable" design, with enlarged hangar for 4 ASW helicopters, but costs rose to the point that the ship was ordered 29-9-79 as a nearly standard version of the class. The basic Spruance hull and propulsion plant have also served as the basis for the Kidd (DDG 993) and Ticonderoga (CG 47, ex-DDG 47) designs. DD 981 carries her name across the stern in script, duplicating the signature of the first signer of the Declaration of Independence. Displacements have risen considerably as equipment has been added; they were originally intended to displace under 7,000 tons full load.

The propulsion machinery is very silent. Prairie-Masker bubbler systems are installed to enhance quietness. On each of the two shafts, two General Electric LM-2500 gas turbines are coupled to a reduction gear. Each shaft turns a controllable-pitch propeller (5.1 m in diameter, 168 rpm at 30 knots). Electric power is furnished by three Allison 501-K17 gas turbines, each powering one 2,000-kw alternator and mounted in separate compartments. Full speed can be reached from 12 knots in only 53 seconds. All propulsion machinery is under the control of a single operator in a central control station (CCS). 30 knots was considerably exceeded on trials. Endurance can be extended greatly by using one engine on one shaft for cruising. The plant has been very successful, except for the exhaust-gas auxiliary boilers. The mean time between overhauls for the LM-2500 gas turbines has been extended to 9,000 hours. DD 997 has the Litton automated engine control system prototype for the DDG 51 class.

The hull form was designed to minimize rolling and pitching; there are no fin stabilizers. Habitability received particular attention, living spaces being divided by bulkheads and intended for no more than six men each, with a recreational area and good sanitary facilities. The crew is small for a ship the size of the Spruance class, because all the machinery and systems have advanced automation.

The armament is being augmented by the installation of two Mk 15 CIWS, but only half the class were equipped by early 1985. ASW is handled by a Mk 116 fire-control system. The Mk 32 torpedo tubes are standard triple trainable mountings, fired through doors in the ships' sides. The Mk 91 Mod. 0 fire-control system for Sea Sparrow uses a single radar director. The Mk 86 Mod. 3 fire-control system for the 127-mm guns uses the SPG-60 radar for AA and the SPQ-9A for surface fire. Magazines hold 1,200 rounds 127-mm. The ASROC reload missiles are stowed vertically, directly beneath the launcher. Kevlar plastic armor is to be added inside vital spaces, beginning with four ships under FY 81; the entire class was to be equipped by 1986. Nine ships (including DD 976 in FY 83, DD 974, 979, 983 in FY 84, DD 984, 985, 989 in FY 85) are currently funded to receive 8 Tomahawk cruise missiles (IV × 2); boxlauncher firing trials were carried out on DD 976 in 1-81 and later, while first operational installation was in DD 974 in late 1984. In 1985-86 DD 963 and 990 are receiving Mk 41 Mod. 0 vertical-launch groups in place of the ASROC launcher; the 32-cell group will hold up to 30 Tomahawk and, later, vertical-launch ASROC missiles. At some future date it may be possible to launch Standard SM-2 MR missiles as well, with the missiles to be controlled by an accompanying Aegis-equipped ship. DD 964, 966, and 991 are to receive the vertical group in 1986-87. DD 977 has had the GFCS modified to Mk 86 Mod. 10 (with a UYK-7 computer in place of the Mk 152 computer, Mk 113 display consoles, new fuze-setters, etc.) to conduct trials with semi-active laser-guided projectiles. DD 976 was also used in 1981 for trials with the General Electric EX-83, 30-mm gatling gun system, which uses a GAU-8 heavy gun and was to carry out trials with an extended-range version of Sea Sparrow. Planned backfitting of the Mk 71, 203-mm gun in the forward position was canceled in 1978 when development of that excellent weapon was unfortunately canceled. DD 971 carries a prototype EX-41 RAM point-defense missile launcher on the starboard quarter.

DESTROYERS (continued)

Eight ships will receive Tomahawk in two armored box launchers, with DD 974, 976, and 983 equipped by end-1985; the remainder will get VLS, beginning with DD 963 in 1986.

All ships of the class are scheduled to receive the Hughes Mk 23 TAS (Target Aquisition System), which uses a high-rpm radar mounted on an aft-projecting platform on the mainmast to detect low-flying, high-speed missiles and aircraft. The SPS-55 surface-search radar has been moved to a new, higher platform on the foremast. Plans still call for the addition of the SQR-19 TACTASS (Tactical Towed-Array Sonar System), but its introduction has been delayed; DD 980 commenced trials fall 1985 with the integrated SQQ-89 sonar system, incorporating the SQS-53B active bow sonar and the SQR-19 TACTASS array. DD 966 carried the SQR-15 TASS on a WestPac tour during 1985. All have the SLQ-25 Nixie torpedo decoy system. Early units were given the WLR-1 EW system as an interim installation until SLQ-32(V)2 was available; at least two ships (DD 971, 975) now have both. DD 974 carries the prototype SSQ-74 ICADS (Integrated Cover and Deception System). RAST deck-haul systems are being added (beginning with DD 989 in 4-85) to permit handling the SH-60B LAMPS-III ASW helicopter; SQQ-28 data link equipment will also be added. Half the class had received TAS by late 1985. DD 976 has WSN-5 SINS.

◆ 11 Forrest Sherman and Hull classes (SCB 240 type)

Note: All in reserve, except DD 946.

6 ASW refits (1967-71) (SCB 221 modernization)

| | Bldr | Laid down | L | In serv. |
|---------------------------|------------------------|-----------|----------|----------|
| DD 937 Davis | Bethlehem, Quincy | 1-2-55 | 28-3-56 | 28-2-57 |
| DD 940 MANLEY | Bath Iron Works | 10-2-55 | 12-4-56 | 1-2-57 |
| DD 941 DUPONT | Bath Iron Works | 11-5-55 | 8-9-56 | 1-7-57 |
| DD 943 BLANDY | Bethlehem, Quincy | 29-12-55 | 19-12-56 | 8-11-57 |
| DD 948 Morton | Ingalls, Pascagoula | 4-3-57 | 23-5-58 | 26-5-59 |
| DD 950 RICHARD S. | Puget Sound SB | 20-12-56 | 21-9-57 | 5-2-59 |
| Edwards | & DD | | | |
| 5 unmodified: | | | | |
| | Bldr | Laid down | L | In serv. |
| DD 931 Forrest Sherman | Boston NSY | 27-10-53 | 5-2-55 | 9-11-55 |
| DD 942 Bigelow | Bath Iron Works | 6-7-55 | 2-2-57 | 8-11-57 |
| DD 944 Mullinix | Bethlehem, Quincy | 5-4-56 | 18-3-57 | 7-3-58 |
| DD 946 Edson | Bath Iron Works | 3-12-56 | 1-1-58 | 7-11-58 |
| DD 951 Turner Joy | Puget Sound SB & DD | 30-9-57 | 5-5-58 | 3-8-59 |

Authorized: DD 931 FY 55, DD 937 in FY 54, DD 940-944 in FY 55, others in FY 56

D: 2,780-2,850 tons (4,050-4,090 fl) **S:** 32.5 kts **Dim:** 127.51 (DD 945 to DD 951: 127.4) × 13.7 × 6.1

A: ASW refits: 2/127-mm Mk 42 DP (I × 2)-1/Mk 116 ASROC ASW RL

 $(VIII \times 1) - 6/324$ -mm Mk 32 ASW TT $(III \times 2)$

Others: 3/127-mm Mk 42 DP (I × 3) — 6/324-mm Mk 32 ASW TT (III × 2) Electron Equipt: Radar: 1/SPS-10, 1/SPS-40, (DD 937, DD 942, DD 946, DD 951: SPS-29), 1/SPG-53A, 1/Mk 35

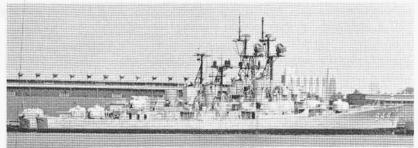
Sonar: SQS-23D; ASW refits: SQS-35 VDS also

EW: WLR-1, WLR-3, ULQ-6 TACAN: DD 946, 951: SRN-6



Edson (DD 946) - the only active unit

L. & L. Van Ginderen, 8-84



Mullinix (DD 944) — unmodified, outboard the ASW conversion *Dupont* (DD 941) at Philadelphia NSY A.D. Baker, 8-84



Richard S. Edwards (DD 950) - ASW version

G. Gyssels, 9-81



Turner Joy (DD 951) - unmodified, while active

L. & L. Van Ginderen, 1980

M: 2 sets G.E. (DD 931, Westinghouse) GT; 2 props; 70,000 hp

Boilers: DD 937, DD 943, DD 944, DD 948: 4 Foster-Wheeler; Others: 4 Babcock & Wilcox; 84 kg/cm², 520°C

Fuel: 750 tons Range: 4,500/20

Man: ASW refits: 19 officers, 287 men; others: 13 officers, 275 men

Remarks: All in reserve, except DD 946, assigned to the Naval Reserve Force for reserve training and as a training ship for the Officer Candidate School, Newport. Being retained as potential gunfire support ships. From DD 937 on, the bows are somewhat higher than DD 931 and DD 933, while DD 945 and later were considered a separate class by reason of their different bow design. Four of the same series were rebuilt as DDGs. There are two radar gunfire-control systems, Mk 68 forward and Mk 56 aft (positions reversed in DD 931 and DD 944). ASW refits have Mk 114 ASW-fire-control systems, the others Mk 105. All Hedgehog and depth charges removed in early 1970s. Originally had four 76.2-mm DP (II × 2), but they were removed from all by 1978. There is an ASROC reload magazine just forward of the launcher on the ASW conversion units.

Decommissioned to reserve: DD 931, DD 942 and DD 943 on 5-11-82; DD 948 and DD 951 on 22-11-82; DD 950 on 15-12-82; DD 937 on 20-12-82; DD 940, and DD 941 on 4-3-83; and DD 944 on 11-8-83. Ex-Barry (DD 933), decommissioned 5-11-82 and struck 31-1-83, is on exhibition at the Washington, D.C., Navy Yard. Sister Jonas Ingram (DD 938), decommissioned 4-3-83 and stricken 15-6-83, was stripped of armament and radars for use as engineering equipment test hulk at Philadelphia NSY; Hull (DD 945), decommissioned 11-7-83, was stricken 15-10-83 for eventual use as a target.

NAVAL RESERVE FORCE FRIGATES

Twenty-four Oliver Hazard Perry- and Knox-class frigates are programmed for the Naval Reserve Force, transferring from the active fleet between 1982 and 1988. In addition, three Reserve Force Squadrons of SH-2F LAMPS-1 helicopters are being formed to supply aircraft for the ships, HSL 84 in FY 1984, HSL 75 in FY 1985, and another in FY 1986. The dates of transfer to the Naval Reserve Force are:

| Miller (FF 1091) | 17-1-82 | SAMUEL ELIOT MORISON (FFG 13) | 6-86 |
|-----------------------------|---------|-------------------------------|-------|
| Lang (FF 1060) | 17-1-82 | Sides (FFG 14) | 8-86 |
| GRAY (FF 1054) | 15-7-82 | ESTOCIN (FFG 15) | 9-86 |
| Valdez (FF 1096) | 14-8-82 | JOHN A. MOORE (FFG 19) | 1-87 |
| Blakeley (FF 1072) | 11-6-83 | Antrim (FFG 20) | 1-87 |
| PATTERSON (FF 1061) | 15-6-83 | LEWIS B. PULLER (FFG 23) | 1-87 |
| Duncan (FFG 10) | 13-1-84 | ROARK (FF 1053) | 6-87 |
| OLIVER HAZARD PERRY (FFG 7) | 31-5-84 | FLATLEY (FFG 21) | 11-87 |
| CLIFTON SPRAGUE (FFG 16) | 31-8-84 | TISDALE (FFG 27) | 1-88 |
| Wadsworth (FFG 9) | 30-6-85 | Fahrion (FFG 22) | 1-88 |
| CLARK (FFG 11) | 30-9-85 | COPELAND (FFG 25) | 1-88 |
| George Philip (FFG 12) | 18-1-86 | Meyerkord (FF 1058) | 1-88 |

GUIDED-MISSILE FRIGATES

♦ 48 (+3) Oliver Hazard Perry class (SCN 207/2081 type)

| | | Laid | | In |
|---------------------------|-----------------|---------|---------|----------|
| | Bldr | down | L | serv. |
| FFG 7 OLIVER HAZARD PERRY | Bath Iron Works | 6-12-75 | 9-25-76 | 30-11-77 |
| FFG 8 McInerney | Bath Iron Works | 16-1-78 | 4-11-78 | 15-12-79 |
| FFG 9 Wadsworth | Todd, San Pedro | 13-7-77 | 29-7-78 | 28-2-80 |
| FFG 10 Duncan | Todd, Seattle | 29-4-77 | 1-3-78 | 24-5-80 |

GUIDED-MISSILE FRIGATES (continued)

| FFG 11 CLARK | Bath Iron Works | 17-7-78 | 24-3-79 | 17-5-80 |
|-----------------------------|-----------------|----------|----------|----------|
| FFG 12 George Philip | Todd, San Pedro | 14-12-77 | 16-12-78 | 18-11-80 |
| FFG 13 SAMUEL ELIOT MORISON | Bath Iron Works | 4-12-78 | 14-7-79 | 11-10-80 |
| FFG 14 Sides | Todd, San Pedro | 7-8-78 | 19-5-79 | 30-5-81 |
| FFG 15 ESTOCIN | Bath Iron Works | 2-4-79 | 3-11-79 | 10-1-81 |
| FFG 16 CLIFTON SPRAGUE | Bath Iron Works | 30-7-79 | 16-2-80 | 21-3-81 |
| FFG 19 JOHN A. MOORE | Todd, San Pedro | 19-12-78 | 20-10-79 | 14-11-81 |
| FFG 20 Antrim | Todd, Seattle | 21-6-78 | 27-3-79 | 26-9-81 |
| FFG 21 FLATLEY | Bath Iron Works | 13-11-79 | 15-5-80 | 20-6-81 |
| FFG 22 Fahrion | Todd, Seattle | 1-12-78 | 24-8-79 | 16-1-82 |
| FFG 23 Lewis B. Puller | Todd, San Pedro | 23-5-79 | 15-3-80 | 17-4-82 |
| FFG 24 Jack Williams | Bath Iron Works | 25-2-80 | 30-8-80 | 19-9-81 |
| FFG 25 COPELAND | Todd, San Pedro | 24-10-79 | 26-7-80 | 7-8-82 |
| FFG 26 GALLERY | Bath Iron Works | 17-5-80 | 20-12-80 | 5-12-81 |
| FFG 27 MAHLON S. TISDALE | Todd, San Pedro | 19-3-80 | 7-2-81 | 13-11-82 |
| FFG 28 BOONE | Todd, Seattle | 27-3-79 | 16-1-80 | 15-5-82 |
| FFG 29 STEPHEN W. GROVES | Bath Iron Works | 16-9-80 | 4-4-81 | 17-4-82 |
| FFG 30 Reid | Todd, San Pedro | 8-10-80 | 27-6-81 | 19-2-83 |
| FFG 31 STARK | Todd, Seattle | 24-8-79 | 30-5-80 | 23-10-82 |
| FFG 32 John L. Hall | Bath Iron Works | 5-1-81 | 24-7-81 | 26-6-82 |
| FFG 33 Jarrett | Todd, San Pedro | 11-2-81 | 17-10-81 | 2-7-83 |
| FFG 34 Aubrey Fitch | Bath Iron Works | 10-4-81 | 17-10-81 | 9-10-82 |
| FFG 36 Underwood | Bath Iron Works | 30-7-81 | 6-2-82 | 29-1-83 |
| FFG 37 Crommelin | Todd, Seattle | 30-5-80 | 1-7-81 | 18-6-83 |
| FFG 38 CURTS | Todd, San Pedro | 1-7-81 | 6-3-82 | 8-10-83 |
| FFG 39 DOYLE | Bath Iron Works | 16-11-81 | 22-5-82 | 21-5-83 |
| FFG 40 Halyburton | Todd, Seattle | 26-9-80 | 13-10-81 | 7-1-84 |
| FFG 41 McCluskey | Todd, San Pedro | 21-10-81 | 18-9-82 | 10-12-83 |
| FFG 42 Kalkring | Bath Iron Works | 19-2-82 | 18-9-82 | 20-8-83 |
| FFG 43 Thach | Todd, San Pedro | 6-3-82 | 18-12-82 | 17-3-84 |
| FFG 45 DE WERT | Bath Iron Works | 14-6-82 | 18-12-82 | 19-11-83 |
| FFG 46 RENTZ | Todd, San Pedro | 18-9-82 | 16-7-83 | 30-6-84 |
| FFG 47 NICHOLAS | Bath Iron Works | 27-9-82 | 23-4-83 | 10-3-84 |
| FFG 48 VANDEGRIFT | Todd, Seattle | 13-10-81 | 15-10-82 | 24-11-84 |
| FFG 49 ROBERT E. BEADLEY | Bath Iron Works | 28-12-82 | 13-8-83 | 11-8-84 |
| FFG 50 Taylor | Bath Iron Works | 5-5-83 | 5-11-83 | 1-12-84 |
| FFG 51 GARY | Todd, San Pedro | 18-12-82 | 19-11-83 | 17-11-84 |
| FFG 52 CARR | Todd, Seattle | 26-3-82 | 26-2-83 | 27-7-85 |
| FFG 53 Hawes | Bath Iron Works | 22-8-83 | 17-2-84 | 9-2-85 |
| FFG 54 Ford | Todd, San Pedro | 16-7-83 | 23-6-84 | 29-6-85 |
| FFG 55 ELROD | Bath Iron Works | 14-11-83 | 12-5-84 | 6-7-85 |
| FFG 56 SIMPSON | Bath Iron Works | 27-2-84 | 31-8-84 | 9-11-85 |
| FFG 57 REUBEN JAMES | Todd, San Pedro | 10-9-83 | 8-2-85 | 22-3-86 |
| FFG 58 SAMUEL B. ROBERTS | Bath Iron Works | 21-5-84 | 8-12-84 | 12-4-86 |
| FFG 59 KAUFFMAN | Bath Iron Works | 8-4-85 | 29-3-86 | 3-87 |
| FFG 60 RODNEY M. DAVIS | Todd, San Pedro | 8-2-85 | 11-1-86 | 12-86 |
| FFG 61 Ingraham | Todd, San Pedro | 12-86 | 11-87 | 12-88 |

Authorized: FFG 7 in FY 73, FFG 8-10 in FY 75, FFG 11-16 in FY 76, FFG 19-26 in FY 77, FFG 27-34 in FY 78, FFG 36-43 in FY 79, FFG 45-49 in FY 80, FFG 50-55 in FY 81, FFG 56-58 in FY 82, FFG 59, 60 in FY 83, FFG 61 in FY 84.

D: 2,769 tons light (3,658 fl); FFG 8, 36-61: 3,010 tons light (3,900 fl)

S: 29 kts (30.6 trials)

Dim: 135.64; FFG 8, 36-58: 138.80 (125.9 wl) × 13.72 × 5.7 (8.6 max.)

A: 1/Mk 13 Mod. 4 launcher (4 Harpoon and 36 Standard SM-1 MR missiles) — 1/76-mm Mk 75 DP; FFG 8, 13, 19, 23, 25, 27-61: 1/20-mm Mk 15 CIWS —



Aubrey Fitch (FFG 34) - short hull profile

L. & L. Van Ginderen, 7-84



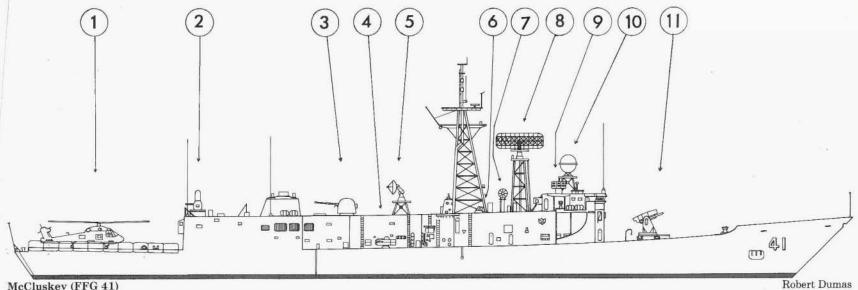
Simpson (FFG 56)

Bath Iron Wks./R. Farr, 9-85



Rentz (FFG 46) - at speed

J. Graham/Todd SY, 4-84



McCluskey (FFG 41)

1. SH-2F LAMPS-I helicopter 2. Mk 15 CIWS 3. 76-mm Mk 75 DP 4. Mk 32 triple ASW TT 5. STIR f.c. radar 6. Mk 137 RL for Mk 36 SRBOC system 7. OE-82 UHF SATCOMM antennas 8. SPS-49 air-search radar 9. SLQ-32 EW array 10. Mk 92 f.c.s. radome 11. Mk 13 launcher

GUIDED-MISSILE FRIGATES (continued)



Sides (FFG 14)

Lt.jg M. Higgins/Lt. J. Chartrand, USN, 1983



Thach (FFG 43) -long hull profile

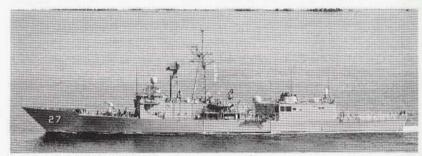
Todd SY, 10-84



Stark (FFG 31)—short LAMPS-I stern, rubbing strakes on sides for Great Lakes L. & L. Van Ginderen, 6-85 cruise



Robert E. Bradley (FFG 49) - Mk 15 CIWS, long stern, no RAST G. Arra, 1984



Mahlon S. Tisdale (FFG 27) - short stern profile

G. Arra, 1984

6/324-mm ASW TT (III \times 2) — 1/SH-2F LAMPS-I (FFG 8, 36-61:

2/SH-60B LAMPS-III) ASW helicopters Electron Equipt: Radar: 1/SPS-55, 1/SPS-49(V)2, 1/Mk 92 Mod. 4, 1/STIR (SPG-60 Mod.)

Sonar: 1/SQS-56 — TACAN: URN-25 EW: SLQ-32(V)2, Mk 36 SRBOC chaff RL (VI × 2)

M: 2 G.E. LM-2500 gas turbines; 1 5.5-m diameter CP, 5-bladed prop; 41,000 hp (40,000 sust.) — 2 drop-down propulsors; 700 hp

Electric: 3,000 kw Fuel: 587 tons + 64 tons helicopter fuel

Range: 4,200/20; 5,000/18 Man: 17 officers, 15 chief petty officers, 183 men

Remarks: Although these ships were intended to operate the LAMPS-III ASW helicopter, FFG 7-35 (less FFG 8) lack the equipment necessary to handle them and will retain LAMPS-I. Beginning with the FY 79 ships (FFG 36 and later), helicopter support equipment is aboard on completion: fin stabilizers, RAST (Recovery Assistance, Securing, and Traversing System, not fitted as completed until FFG 50), and other systems. The RAST system permits helicopter launch and recovery with the ship rolling through 28 degrees and pitching 5 degrees. The equipment was first installed in McInerney (FFG 8), which was reconstructed, completing 12-2-81 at Bath Iron Works, to act as LAMPS-III/SH-60B Sea Hawk helicopter trials ship; the stern was lengthened by 2.2 m (the extension being slightly lower than the flight deck, to accommodate mooring equipment) by changing the rake of the stern. FFG 26 conducted fin stabilizer trials in 1982. These ships were supposed to have received SQR-19 TACTASS equipment, beginning with FFG 36, and SQR-18A to be backfitted in earlier units; however, delays in development left none of the ships with the gear into 1985. The Mk 15 CIWS (Close-In Weapon System) 20-mm Vulcan/Phalanx was to be backfitted into all by 1988. Two Mk 24 optical target designators (mounted in tubs atop the pilothouse) were not fitted to the ships as completed until FFG 27 and have been backfitted in the earlier ships. FFG 7 was originally numbered PF 109. Speed on one turbine is 25 knots; the auxiliary power system uses two retractable pods located well forward and can drive the ships at up to 6 knots. The Mk 92 Mod. 4 fire-control system controls missile and 76-mm gunfire; it uses a STIR (modified SPG-60) antenna and a U.S.-built version of the Hollandse Signaal Apparaaten WM-28 radar forward, and can track four separate targets. The Mk 92 system is programmed for three stages of improvement; the first, given trials in FFG 29 in 1983, was to be backfitted to all by 10-84 as the "Near-Term Improvement," along with Standard SM-1 MR Block 6 missiles. Phase two (Mk 92 CORT) began trials in FFG 15 in 5-86. The Mk 75 gun is a license-built version of the OTO Melara Compact. A Mk 13 weapons-direction system is fitted. The only ship-launched ASW ordnance is the Mk 46 torpedoes in the two triple torpedo tubes. These ships are particularly well protected against splinter and fragmentation damage, with 19-mm aluminum-alloy armor over magazine spaces, 16-mm steel over the main engine-control room, and 19-mm Kevlar plastic armor over vital electronics and command spaces.

Original complement was planned at 17 officers, 167 men, which was found to be too many officers but far too few enlisted men to run and maintain the ships. Therefore,

GUIDED-MISSILE FRIGATES (continued)

FFG 19 and up are fitted with 30 additional enlisted bunks, with the others to be backfitted.

FFG 17, 18, 35, and 44 of this class were built by Todd, Seattle, for Australia, which is building two more in-country. Spain is building five.

The Navy had hoped to phase out construction of this class with the FY 83 ships, FFG 59 and 60, but Congress authorized (but did not fully fund) FFG 61 in FY 84; FFG 61 was initially mandated to have the as yet unbuilt and untested Sperry Phase-III update to the Mk 92 f.c.s., adding four fixed phased-array radar panels (two facing the after quadrants on a mast platform and two covering the forward quadrants atop the bridge). Instead, the ship will have the "Phase-II" Mk 92 Mod. 6 f.c.s.

Already possessing a "surplus" of frigates, the U.S. Navy has no immediate plans for new construction in this category.

6 Brooke class (SCR 199B type)

| | Bldr | Laid down | L | In serv. |
|-----------------------|-------------------|-----------|----------|----------|
| FFG 1 BROOKE | Lockheed, Seattle | 10-12-62 | 19-7-63 | 12-3-66 |
| FFG 2 RAMSEY | Lockheed, Seattle | 4-2-63 | 15-10-63 | 3-6-67 |
| FFG 3 SCHOFIELD | Lockheed, Seattle | 15-4-63 | 7-12-63 | 11-5-68 |
| FFG 4 TALBOT | Bath Iron Works | 4-5-64 | 6-1-66 | 2-4-67 |
| FFG 5 RICHARD L. PAGE | Bath Iron Works | 4-1-65 | 4-4-66 | 5-8-67 |
| FFG 6 Julius A. Furer | Bath Iron Works | 12-7-65 | 22-7-66 | 11-11-67 |

Authorized: FFG 1-3 in FY 62, FFG 4-6 in FY 63



Brooke (FFG 1) - no ASROC reloads

L. & L. Van Ginderen, 10-85



Julius A. Furer (FFG 3) - ASROC reload version

G. Arra, 8-85



Talbot (FFG 4)

R. Scheina, 7-84

D: 2,643 tons (3,600 fl) S: 27.2 kts

Dim: 126.33 (121.9 wl) × 13.47 × 7.9 (over sonar)

A: 1/Mk 22 launcher (I × 1, 16 Standard SM-1 MR missiles) - 1/127-mm 38-cal. DP-1/Mk 116 ASROC ASW RL (VIII × 1)-6/324-mm Mk 32 ASW TT (III × 2) - 1/SH-2F LAMPS-I ASW helicopter

Electron Equipt: Radar: 1/LN-66, 1/SPS-10F, 1/SPS-52B, 1/SPG-51C, 1/Mk35 Sonar: 1/SQS-26BX — TACAN: SRN-15 EW: SLQ-32(V)2, Mk 36 SRBOC chaff RL (VI × 2)

M: 1 set Westinghouse (FFG 4 to FFG 6: G.E.) GT; 1 prop; 35,000 hp Boilers: 2 Foster-Wheeler; 84 kg/cm², 510°C Electric: 2,000 kw Fuel: 600 tons Range: 4,000/20 Man: 16 officers, 250 men

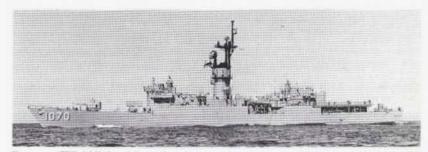
Remarks: Differ from the Garcia class in having their aft 127-mm gun replaced by a missile launcher. Excellent sea-keeping qualities. Anti-rolling stabilizers. The hangar, which was enlarged for the SH-2 LAMPS-I helicopter, is telescoping, as on the Knox class. FFG 4 through FFG 6 have an ASROC reload magazine with 8 missiles. FFG 4 was used as an experimental ship for the weapons and systems of the Oliver Hazard Perry (FFG 7), but was restored to standard configuration. A Mk 56 Mod. 43 radar gunfire-control system is carried, while the missile system is Mk 74 Mod. 6; Mk 4 Mod. 2 weapons-direction system is fitted, as is the Mk 114 ASW-control system. These ships are not scheduled to receive Harpoon SSM or the Mk 15 CIWS 20-mm gatling gun, but they are getting the SLQ-32(V)2 intercept array in place of the original WLR-1, WLR-3 and ULQ-6 suite. FFG 6 has SQS-26AXR sonar.

FRIGATES

46 Knox class (SCN 199C, 200 and 200-65 types)

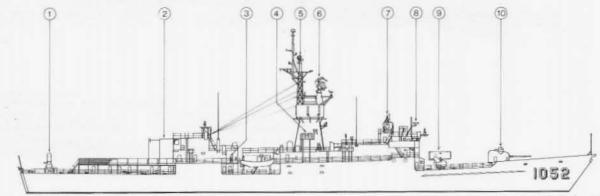
| | Bldr | Laid down | L | In serv. |
|---|-------------------|-----------|----------|----------|
| FF 1052 Knox | Todd, Seattle | 5-10-65 | 19-11-66 | 12-4-69 |
| FF 1053 ROARK | Todd, Seattle | 2-2-66 | 24-4-67 | 22-11-69 |
| FF 1054 Gray | Todd, Seattle | 19-11-66 | 3-10-67 | 4-4-70 |
| FF 1055 HEPBURN | Todd, San Pedro | 1-6-66 | 25-3-67 | 3-7-69 |
| FF 1056 CONNOLE | Avondale SY | 23-3-67 | 20-7-68 | 30-8-69 |
| FF 1057 RATHBURNE | Lockheed, Seattle | 8-1-68 | 2-5-69 | 16-5-70 |
| FF 1058 MEYERKORD | Todd, San Pedro | 1-9-66 | 15-7-67 | 28-11-69 |
| FF 1059 WILLIAM S. SIMS | Avondale SY | 10-4-67 | 4-1-69 | 3-1-70 |
| FF 1060 LANG | Tod, San Pedro | 25-3-67 | 17-2-68 | 28-3-70 |
| FF 1061 PATTERSON | Avondale SY | 12-10-67 | 3-5-69 | 14-3-70 |
| FF 1062 WHIPPLE | Todd, Seattle | 24-4-67 | 12-4-68 | 22-8-70 |
| FF 1063 Reasoner | Lockheed, Seattle | 6-1-69 | 1-8-70 | 31-1-71 |
| FF 1064 Lockwood | Todd, Seattle | 3-11-67 | 5-9-68 | 5-12-70 |
| FF 1065 STEIN | Lockheed, Seattle | 1-6-70 | 19-12-70 | 8-1-72 |
| FF 1066 MARVIN SHIELDS | Todd, Seattle | 12-4-68 | 23-10-69 | 10-4-71 |
| FF 1067 Francis Hammond | Todd, San Pedro | 15-7-67 | 11-5-68 | 25-7-70 |
| FF 1068 VREELAND | Avondale SY | 20-3-68 | 14-6-69 | 13-6-70 |
| FF 1069 BAGLEY | Lockheed, Seattle | 22-9-70 | 24-4-71 | 6-5-72 |
| FF 1070 Downes | Todd, Seattle | 5-9-68 | 13-12-69 | 28-8-71 |
| FF 1071 BADGER | Todd, San Pedro | 17-2-68 | 7-12-68 | 1-12-70 |
| FF 1072 BLAKELY | Avondale SY | 3-6-68 | 23-8-69 | 18-7-70 |
| FF 1073 ROBERT E. PEARY (ex-Conolly) | Lockheed, Seattle | 20-12-70 | 23-6-71 | 23-9-72 |
| FF 1074 HAROLD E. HOLT | Todd, San Pedro | 11-5-68 | 3-5-69 | 26-3-71 |
| FF 1075 TRIPPE | Avondale SY | 29-7-68 | 1-11-69 | 19-9-70 |
| FF 1076 FANNING | Todd, San Pedro | 7-12-68 | 24-1-70 | 23-7-71 |
| FF 1077 OUELLET | Avondale SY | 15-1-69 | 17-1-70 | 12-12-70 |
| FF 1078 Joseph Hewes | Avondale SY | 15-5-69 | 7-3-70 | 24-4-71 |
| FF 1079 BOWEN | Avondale SY | 11-7-69 | 2-5-70 | 22-5-71 |
| FF 1080 Paul | Avondale SY | 12-9-69 | 20-6-70 | 14-8-71 |
| FF 1081 AYLWIN | Avondale SY | 13-11-69 | 29-8-70 | 18-9-71 |
| FF 1082 Elmer Montgomery | Avondale SY | 23-1-70 | 21-11-70 | 30-10-71 |
| FF 1083 Cook | Avondale SY | 20-3-70 | 23-1-71 | 18-12-71 |
| FF 1084 McCandless | Avondale SY | 4-6-70 | 20-3-71 | 18-3-72 |
| FF 1085 DONALD B. BEARY | Avondale SY | 24-7-70 | 22-5-71 | 22-7-72 |
| FF 1086 Brewton | Avondale SY | 2-10-70 | 24-7-71 | 8-7-72 |
| FF 1087 Kirk | Avondale SY | * 4-12-70 | 25-9-71 | 9-9-72 |
| FF 1088 Barbey | Avondale SY | 5-2-71 | 4-12-71 | 11-11-72 |
| FF 1089 JESSE L. BROWN | Avondale SY | 8-4-71 | 18-3-72 | 17-2-73 |
| FF 1090 AINSWORTH | Avondale SY | 11-6-71 | 15-4-72 | 31-3-73 |
| FF 1091 MILLER | Avondale SY | 6-8-71 | 3-6-72 | 30-6-73 |
| FF 1092 Thomas C. Hart | Avondale SY | 8-10-71 | 12-8-72 | 28-7-73 |
| FF 1093 CAPODANNO | Avondale SY | 12-10-71 | 21-10-72 | 17-11-73 |
| FF 1094 Pharris | Avondale SY | 11-2-72 | 16-12-72 | 26-1-74 |
| FF 1095 TRUETT | Avondale SY | 27-4-72 | 3-2-73 | 1-6-74 |
| FF 1096 VALDEZ | Avondale SY | 30-6-72 | 24-3-73 | 27-7-74 |
| FF 1097 Moinester | Avondale SY | 25-8-72 | 12-7-73 | 2-11-74 |

Authorized: 10 in FY 64, 16 in FY 65, 10 in FY 66, 10 in FY 67



Downes (FF 1070) - Mk 15 CIWS aft, no bow bulwarks, WLR-1 and SLQ-32 EW G. Arra, 1984

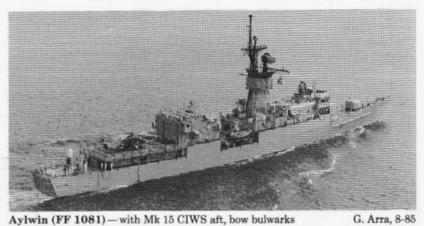
FRIGATES (continued)



A.D. Baker III Knox (FF 1052) 1. Mk 15 CIWS (20-mm Vulcan/Phalanx) AA 2. Telescoping hangar for LAMPS-I helicopter 3. Mk 32 ASW TT (II×2) 4. SLQ-32(V)2 EW 5. SPS-10 surface-search radar 6. SPS-40 air-search radar 7. Mk 68 GFCS 8. navigational radar 9. Mk 116 ASROC ASW RL (VIII×1) 10. 127-mm 54-cal. Mk 42 DP gun



McCandless (FF 1084) — no bow bulwarks, Mk 15 CIWS aft L. & L. Van Ginderen, 7-85



Aylwin (FF 1081) - with Mk 15 CIWS aft, bow bulwarks



Kirk (FF 1087) — Pollack (SSN 603) alongside. Note WLR-1 and SLQ-32 EW gear, SH-2F helo, Mk 15 CIWS G. Arra, 3-85



Vreeland (FF 1068) - VDS door in stern

Pradignac & Leo, 9-84



Capodanno (FF 1093)

R. Farr/Bath Iron Wks., 1984

FRIGATES (continued)



Bagley(FF 1069)

G. Arra, 7-85

D: 3,066 tons light (4,250 fl) S: 27+ kts

Dim: 133.59 (126.5 wl) × 14.33 × 4.60 (7.55 over sonar) - see remarks A: 4/Harpoon SSM (using Mk 116 ASROC launcher system) - 1/127-mm Mk 42 DP-1/20-mm Mk 15 CIWS or 1/Mk 25 BPDMS Sea Sparrow launcher $(VIII \times 1) - 1/Mk$ 116 ASROC system $(VIII \times 1) - 4/324$ -mm Mk 32 fixed ASW TT-1/SH-2 LAMPS-I ASW helicopter

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40B, 1SPG-53 Sonar: 1/SQS-26CX, SQS-35(V) VDS (except FF 1053 to FF 1055, FF 1057 to FF 1062, FF 1072, FF 1077), SQR-18A(V)1 TACTASS on VDS ships

EW: SLQ-32(V)1 or 32(V)2, Mk 36 SRBOC chaff RL (VI × 2) TACAN: SRN-15

M: 1 set Westinghouse GT; 1 prop; 35,000 hp Electric: 3,000 kw Boilers: 2 Babcock & Wilcox or Foster-Wheeler; 84 kg/cm², 510°C Fuel: 750 tons Range: 4,300/20 Man: 20 officers, 255 men

Remarks: An additional ten ships of the FY 68 program (FF 1098 to FF 1107) were canceled. Bow bulwarks and a spray strake were being added forward to reduce deck wetness, a problem in this class, but funding shortages curtailed the program before all were altered; the addition extends length overall to approx. 134.0 m. The ASROC system has an automatic reloading magazine beneath the bridge; it is also used to stow Harpoon missiles, which are launched from the port pair of eight launcher cells (FF 1091 first to receive Harpoon, 1976). FF 1084 to FF 1097 did not receive a Mk 25 BPDMS launcher for Sea Sparrow. FF 1070 has been used as NATO Sea Sparrow trials ship; she carried a Mk 29 NATO Sea Sparrow launcher and the two-director Mk 91 Mod. 1 fire-control system, later reduced to one director (Mk 91 Mod. 0 system); FF 1070 also carried the Hughes Mk 23 Mod. 0 TAS (Target Acquisition System) in place of the SPS-40 radar; these systems were removed during her 1983 refit. The ASW torpedo tubes are fixed, in the forward end of the hangar superstructure, aimed outboard at an angle of 45°. The Mk 25 BPDMS (Basic Point Defense Missile System) launcher for Sea Sparrow is being replaced by a 20-mm Mk 15 CIWS, Vulcan/Phalanx gatling AA system, beginning with FF 1087 in 1982; by 10-83 13 ships had the gun, and all 46 will have it by 1990. Beginning with twelve ships under FY 80, the SQS-35 towed VDS transducer body and hoist was modified to permit towing the SQR-18A TACTASS. FF 1088 also has acted as a trials ship and had a controllablepitch prop; the large inflatable radome atop her hangar has been removed. All carry a Mk 68 gunfire-control system with SPG-53A, D, or F radar. All are receiving SRN-15 TACAN sets during overhauls, and SPS-67 will replace SPS-10 later in the 1980s. SLQ-32(V)1 (later upgraded to (V)2) is replacing WLR-1C as the EW suit; some (FF 1064, 1067, 1070, 1087, etc.) have both. A few ships retain LN-66 navigational radars and all have two OE-82 satellite-communications antennas for the WSC-3 system. Ships with Sea Sparrow have a single Mk 115 missile-fire-control system (Mk 71 director). All have Mk 114 ASW fire-control system. FF 1078 to FF 1097 have a TEAM (SM-5) computer system for the continual monitoring of the ship's electronic equipment. Anti-rolling fin stabilizers fitted in all. Prairie-Masker bubble system fitted to hulls and propellers to reduce radiated noise. All are to receive the ASW TDS (ASW Tactical Data System) beginning FY 83. Six serve the Naval Reserve Force, with two more to follow; see the names and dates on page 640. Non-VDS ships to get SQR-18A(V)2 TACTASS; trials in FF 1077, 1983.

1 former experimental escort ship (SCB 198 type)

Bldr Laid down In serv. FF 1098 GLOVER 29-7-63 17-4-65 13-11-65 Bath Iron Works (ex-AGFF 1, ex-AGDE 1, ex-AG 163)

Authorized: FY 61



Glover (FF 1098) - note raised stern for VDS

L. & L. Van Ginderen, 5-84

D: 2,700 tons (3,630 fl) S: 27 kts

Dim: 126.33 (121.9 wl) × 13.47 × 7.9 (over sonar)

A: 1/127-mm 38-cal. DP-1/Mk 116 ASROC ASW RL (VIII × 1)-6/324-mm Mk 32 ASW TT (III × 2)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-40, 1/Mk 35

Sonar: SQS-26AXR, SQS-35 VDS EW: WLR-1, ULQ-6, 2/Mk 33 RBOC chaff

M: 1 set Westinghouse GT; 1 prop; 35,000 hp Electric: 2,000 kw

Boilers: 2 Foster-Wheeler; 83.4 kg/cm², 510°C Man: 15 officers, 218 men Range: 4,000/20 Fuel: 600 tons

REMARKS: Redesignated from AGFF on 1-10-79 because she now conducts operational cruises. "FF 1098" was previously used for a later-canceled Knox-class frigate; this is the first instance of a previously allocated hull number being reused. Basically a Garcia-class ship with identical hull form, but with a pump-jet propeller and the after 127-mm gun omitted to provide accommodations for civilian technicians. Extreme stern raised during installations of SQS-35 VDS. No ASROC reload magazine.

♦ 10 Garcia class (SCB 199A type)

| | Bldr | Laid down | L | In serv. |
|--------------------------|-----------------------------|-----------|----------|----------|
| FF 1040 Garcia | Bethlehem, San Francisco | 16-10-62 | 31-10-63 | 21-12-64 |
| FF 1041 Bradley | Bethlehem, San Francisco | 17-1-63 | 26-3-64 | 15-5-65 |
| FF 1043 EDWARD McDonnell | Avondale SY | 1-4-63 | 15-2-64 | 15-2-65 |
| FF 1044 Brumby | Avondale SY | 1-8-63 | 6-6-64 | 5-8-65 |
| FF 1045 Davidson | Avondale SY | 20-9-63 | 3-10-64 | 7-12-65 |
| FF 1047 Voge | Defoe SB, Michigan | 21-11-63 | 4-2-65 | 25-11-66 |
| FF 1048 Sample | Lockheed, Seattle | 19-7-63 | 28-4-64 | 23-3-68 |
| FF 1049 Koelsh | Defoe SB, Michigan | 19-2-64 | 8-6-65 | 10-6-67 |
| FF 1050 ALBERT DAVID | Lockheed, Seattle | 29-4-64 | 19-12-64 | 19-10-68 |
| FF 1051 O'CALLAHAN | Defoe SB, Michigan | 19-2-64 | 20-10-65 | 13-7-68 |

Authorized: 2 in FY 61, 3 in FY 62, 5 in FY 63



Garcia (FF 1040) - no ASROC reload magazine

G. Arra, 8-85



Bradley (FF 1041)

G. Arra, 9-85



Albert David (FF 1050) - ASROC reloads, but no LAMPS capability

G. Arra, 5-85

FRIGATES (continued)

D: 2,624 tons (3,400-3,560 fl) S: 27 kts

Dim: 126.33 (121.9 wl) \times 13.47 \times 7.9 (over sonar) A: 2/127-mm 38-cal. DP (I \times 2) — 1/ASROC ASW RL (VIII \times 1) —6/324-mm Mk 32 ASW TT (III × 2) -- 1/SH-2 LAMPS-I ASW helicopter (except FF 1040, 1043, 1048, 1050)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40, 1/Mk 35 Sonar: FF 1040-1045: SQS-26BX; others: SQS-26AXR; FF

1040, 1043 also: SQR-15 TACTASS EW: WLR-1, WLR-3, ULQ-6

TACAN: SRN-15 in LAMPS-I ships

M: 1 set G.E. GT; 1 prop; 35,000 Electric: 2,000 kw

Boilers: 2 Foster-Wheeler; 83.4 kg/cm², 510°C Range: 4,000/20

Fuel: 600 tons Man: 18 officers, 250 men

Remarks: Anti-rolling stabilizers fitted. FF 1047 and FF 1049 have a special ASW NTDS. The boilers are vertical and have turbopressurized combustion. Hangar enlarged for SH-2F LAMPS-I helicopter, 1972-75, except for FF 1048 and FF 1050, which carried the BQR-15 towed passive linear hydrophone array on their sterns until 1982; FF 1040 and 1043, which have the enlarged hangar, carry BQR-15 instead of helicopters. Gunfire control is by a Mk 56 radar director, and the Mk 114 ASW fire-control system is installed. FF 1047 and later have an ASROC reload magazine beneath the bridge. Twin Mk 25 torpedo tubes at the stern have been removed from the ships that had them. FF 1041 carried Mk 25 Sea Sparrow launcher in 1967-68 for trials. Although these are relatively recent ships, there are no plans to modernize their obsolescent gun systems or to add Harpoon or modern EW gear.

2 Bronstein class

| | Bldr | Laid down | L | In serv. |
|-------------------|-------------|-----------|---------|----------|
| FF 1037 Bronstein | Avondale SY | 16-5-61 | 31-5-62 | 16-6-63 |
| FF 1038 McCloy | Avondale SY | 15-9-61 | 9-6-62 | 21-10-63 |



McClov (FF 1038)

Pradignac & Leo, 1984



Bronstein (FF 1037)

L. & L. Van Ginderen, 3-84

D: 2,000 tons (2,650 ft) **S**: 26 kts **Dim**: $113.23 \times 12.34 \times 7.0$ **A**: 2/76.2-mm Mk 33 (II \times 1) -1/Mk 116 ASROC ASW RL (VIII \times 1) -6/324-mm Mk 32 ASW TT (III × 2)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40, 1/Mk 35 Sonar: 1/SQS-26AXR, 1/SQR-15 TASS (not in FF 1037)

EW: WLR-1, WLR-3, ULQ-6
M: 1 set de Laval GT; 1 prop; 20,000 hp Fuel: 480 tons

Boilers: 2 Foster-Wheeler; 42.2 kg/cm², 440°C Man: 13 officers, 197 men

Remarks: Only remaining U.S. frigates with 76.2-mm guns, controlled by a Mk 56 radar director. Single 76.2-mm aft replaced by SQR-15 TASS towed passive hydrophone array sonar. Have Mk 114 Mod. 7 ASW fire-control system. No ASROC reload magazine. TASS towed array gear removed from FF 1037 circa 1981; port boat and davits removed from both.

GUIDED-MISSILE PATROL BOATS

• 6 PHM (Patrol Hydrofoil Missile) class (SCB 602 type)

| | Bldr | Laid down | L | In serv. |
|------------------------------|-----------------|-----------|---------|----------|
| PHM 1 Pegasus (ex-Delphinus) | Boeing, Seattle | 10-5-73 | 9-11-74 | 9-7-77 |
| PHM 2 HERCULES | Boeing, Seattle | 12-9-80 | 13-4-82 | 12-3-83 |
| PHM 3 Taurus | Boeing, Seattle | 30-1-79 | 8-5-81 | 7-10-81 |
| PHM 4 AQUILA | Boeing, Seattle | 10-7-79 | 16-9-81 | 19-12-81 |
| PHM 5 Aries | Boeing, Seattle | 7-1-80 | 11-81 | 18-9-82 |
| PHM 6 GEMINI | Boeing, Seattle | 13-5-80 | 17-2-82 | 12-3-83 |

Authorized: 2 in FY 73, 4 in FY 75



Hercules (PHM 2)

Boeing Marine, 1982



Aquila (PHM 4) - with foils raised

L. & L. Van Ginderen, 1984



Aries (PHM 5)

Boeing Marine, 1983

GUIDED-MISSILE PATROL BOATS (continued)

D: 198 tons light (241 fl, except PHM 1: 235 fl) S: 50 kts (11 on diesel)
Dim: 40.5 (44.7 with foils retracted; 36.00 wl) × 8.6 (14.5 over aft foils) × 7.1 (1.9 with foils retracted)/2.7 foilborne

A: 8 Harpoon SSM (IV × 2) — 1/76-mm Mk 75 DP (OTO Melara Compact) Electron Equipt: Radar: 1/SPS-63, 1/Mk 92 Mod. 1 fire-control system EW: SLR-20, Mk 34 RBOC chaff RL (VI × 2)

M: CODOG: 1 G.E. LM-2500 PB 102 gas turbine; 1 Aerojet AJW-18800-1 water jet; 16,000-19,416 hp; 2 MTU 8V331 TC81, 815 hp diesels; 2 Aerojet AJW-800-1 water jets; 1,340 hp

Electric: 405 kVA Range: 600/40; 1,200+/11 Fuel: 50 tons Man: 4 officers, 17 men

REMARKS: PHM 2 originally authorized under FY 73 and laid down on 30-5-74; her construction was suspended in 8-75, when 40.9 percent complete, but a new hull was laid down 12-9-80 with FY 76 funds. Originally projected as a class of thirty, also to be built by or for other NATO nations, but the additional cost over that of conventional missile craft with similar capabilities was prohibitive, and the U.S. Navy's interest in the type waned. PHM 1 began her protracted trials on 2-25-75. PHM 2 through PHM 6 were canceled on 15-4-77, then reinstated on 14-8-77 at the insistence of Congress, the contract going to Boeing on 20-10-77. PHM 1's gas turbine develops 16,000 hp; on the others 19,416 hp is possible, with the water jet pumping some 341,000 liters/min. at full speed; 55 kts was achieved on trials. Two AIResearch ME 831-800 gas turbines power the two generators. The Mk 92 Mod. 1 fire-control system is an Americanized version of the Hollandse Signaal Apparaaten WM-28 system. PHM 1 has the earlier Mk 94 Mod. 1 variant. SPS-63 is an Americanized version of the Italian SMA 3TM 20-H radar. It was planned at one time to carry eight reload Harpoons, for a total of sixteen. Magazine capacity 400 rds. 76-mm. PHM 6 didn't receive her armament or Mk 92 f.c.s. until 9-83. These craft are extraordinarily steady weapons platforms. All are being backfitted with the SSQ-87(V) collision-avoidance and tracking system. Based at Key West, Florida, as PHM Squadron 2; they are supported by 7 officers and 181 men, working from 73 mobile vans.

Note: Approval to strike the last 2 of 17 Asheville-class gunboats, Gallup (PG 85) and Canon (PG 90) was granted 12-84; both had been stricken 31-1-77 but restored to the Navy List 17-7-81 and are stored at Bremerton. Sisters Beacon (PG 99) and Green Bay (PG 101), stricken 1-4-77, remain in storage at Little Creek, Va., for possible foreign sale.

PATROL CRAFT

Note: The former "Multi-Mission Patrol Boat" (PBM) program has been officially redesignated "Special Warfare Craft, Medium (SWCM) and is now described with amphibious warfare units on a later page.

◆ 3 Sea Spectre PB Mk-IV class Bldr: Atlantic Marine, Ft. George Island, Fla. (In serv. 17-12-85)

D: . . . S: . . . Dim: 20.72 × 5.50 × . . . A: . . . Electron Equipt: 1/. . . nav. M: 3 G.M. 8V71 TI diesels; 3 props; 1,950 hp

Range: . . . Man: . . .

Remarks: Approved under FY 85 for Canal Zone service. Essentially a lengthened version of the PB Mk-III below. Aluminum construction.

♦ 17 Sea Spectre PB Mk-III class Bldr: Peterson Bldrs. (In serv. 1975-79)

D: 28 tons (36.7 fl) **S:** 30 kts **Dim:** $19.78 \times 5.5 \times 1.8$

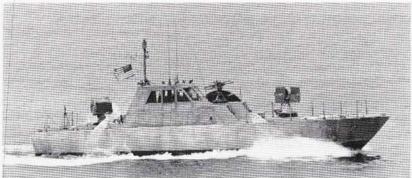
A: 1/40-mm AA or 1-2/25-mm Mk 88 AA (I \times 1 or 2) -2/12.7-mm mg (I \times 2) -1/81-mm mortar/12.7-mm mg combination (see remarks)

Electron Equipt: Radar: 1/. . . nav.

M: 3 G.M. 8V71 TI diesels; 3 props; 1,950 hp

Range: 500/30 Man: 1 officer, 4 men

Remarks: Thirteen operate with active fleet Special Boat Units, 4 with Naval Reservists. Winner in competition with Mk-I. Sisters were built for Iran and the Philippines. One was used as trials craft for Norwegian Penguin Mk II missiles in 1981-82, with four missiles mounted on the stern. The 40-mm weapon is in a special, stabilized mounting.



PB Mk-III class — with 12.7-mm mg fore and aft, 81-mm mortar amidships L. & L. Van Ginderen, 6-83



PB Mk-III — with stabilized 40-mm AA forward, 2/12.7-mm mg

G. Arra, 1983

◆ 2 PB Mk-I class Bldr: Sewart Seacraft, Berwick, La. (In serv. 1973)



PB Mk-I class - disarmed as a pilot boat

G. Arra, 1985

D: 27 tons (36.3 fl) **S:** 20 kts **Dim:** $19.78 \times 5.25 \times 1.37$

A: 2/20-mm AA (II \times 1) — 4/12.7-mm mg — 1/81-mm mortar/12.7-mm mg combination (now removed)

M: 2 G.M. 12V71 diesels; 2 props; 1,200 hp Range: 30/26 Man: 2 officers, 6 men

♦ 2 PCF Mk-II class

Bldr: Swiftships, Morgan City, La. (In serv. 1967-68)

♦ 3 PCF Mk-I

Bldr: Swiftships (In serv. 7-65 to 7-66)



PCF Mk-I class (PCF 67)

D: 17.5 tons (22.5 fl) S: 22 kts Dim: 15.3 (Mk-II: 15.66) \times 4.55 \times 1.1 A: 1/81-mm mortar/12.7-mm mg combination — 2/12.7-mm mg Electron Equipt: Radar: 1/Raytheon 1500B Range: 400/22 Man: 6 tot. M: 2 G.M. 12V71 TI diesels; 2 props; 850 hp Electric: 6 kw

Remarks: Survivors of some 125 built. Aluminum alloy construction. Used for Naval Reserve training by Special Boat Unit SBU 22 at New Orleans. Mk-II added a low forecastle.

RIVERINE WARFARE CRAFT

 32 PBR (Patrol Boat, Riverine) Mk-II (In serv. 12-81 to 8-83) Bldr: Uniflite, Bellingham, Wash.

RIVERINE WARFARE CRAFT (continued)



PBR Mk-II class

U.S. Navy, 1974

D: 8.9 tons (fl) S: 24 kts Dim: $9.73 \times 3.53 \times 0.81$ A: 3/12.7-mm mg (II \times 1, I \times 1) -1/60-mm mortar Electron Equipt: Radar: 1/Raytheon 1900 M: 2 G.M. 6V53N diesels; 2 Jacuzzi water jets; 430 hp Range: 150/23 Man: 4 tot.

Remarks: Fiberglass hull, plastic armor. Used for Naval Reserve training by Special Boat Units. Some recent export versions of this class have G.M. 6V53T engines, for 550 hp and speeds of 30 kts. Three delivered 1982 had G.M. 4-53N diesels.

MINE WARFARE SHIPS

Note: In addition to the ships and craft listed below, there are also 23 RH-53D minesweeping helicopters in service, and 16 Marine Corps CH-53D that can be used to tow sweep gear; 56 MH-53E minesweeping helicopters are programmed. Except for MSO 443, MSO 448, and MSO 490, all minesweepers are assigned to the Naval Reserve Force.

♦ 0 (+5+12) MSH 1-class coastal minehunters

| | Bldr | Laid down | L | In serv. |
|----------------|--------------------------|-----------|-------|----------|
| MSH 1 CARDINAL | Bell-Halter, New Orleans | 13-2-86 | * * * | 2-88 |
| MSH 2 N | | | | 1988 |
| MSH 3 N | | | | 1988 |
| MSH 4 N | | | | 1989 |
| MSH 5 N | | | | 1989 |

Programmed: MSH 1 in FY 84, MSH 2-5 in FY 86.

Programmed: 4/yr in FY 87-89.

D: 440 tons (fl) **S:** 14 kts **Dim:** 57.60 × 11.89 × 4.04 (0.76 on cushion)

A: 2/12.7-mm mg (I × 2)

Electron Equipt: Radar: SPS-64(V)9-Sonar: SQQ-32

M: 2 Isotta-Fraschini ID36 SS6V-AM diesels; 2/5-bladed props; 1,160 hp (2



Cardinal (MSH 1) - artist's rendering

J. Carr/Bell-Halter, 1983

Isotta-Fraschini ID36 SS8V-AM diesels for lift fans; 1,650 hp) — 1/180-hp retractable ducted prop; 2/180-hp hydraulic motors to drive main props

Range: . . . Endurance: 5 days Electric: 900 kw Man: 4 officers, 37 men

Remarks: Winner in design contest contracted 15-4-83. Uses Swedish Karlskrona-developed foam core glass-reinforced plastic construction for much of the catamaran hull structure. Basic concept is a rigid-sidewall air-cushion vehicle, with rubber seals fore and aft to capture the air bubble. Two of the three 300-kw generators will be powered by the lift engines, the third by an additional ID36-series diesel. A Honeywell SLQ-48 MNS (Mine Neutralization System) remote-controlled submersible will be carried. The ships, all to be named for "state birds," are to be operated by the Naval Reserve Force and based in U.S. commercial ports—an interesting operational concept, considering the complexity of the design.

MSH 1 was authorized in FY 84 and ordered 26-11-84, with options to build the next eight. MSH 2-5 were authorized under FY 86. Future programming uncertain, as it is intended to "second-source" to another yard to keep down acquisition costs. The data above are not final; displacement has grown considerably, and congressional pres-

sures may mandate a change of engines in later units.

♦ 0 (+11+3) MCM 1-class oceangoing minesweeper/minehunters

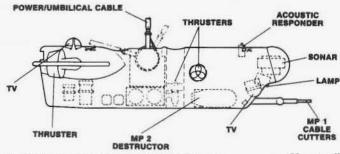
| | Bldr | Laid down | L | In serv. |
|----------------|----------------|-----------|---------|----------|
| MCM 1 AVENGER | Peterson Bldrs | 3-6-83 | 15-6-85 | 10-86 |
| MCM 2 DEFENDER | Marinette | 1-12-83 | 7-86 | 1987 |
| MCM 3 SENTRY | Peterson Bldrs | 8-10-84 | 8-86 | 9-87 |
| MCM 4 CHAMPION | Marinette | 28-6-84 | 9-86 | 1988 |
| MCM 5 GUARDIAN | Peterson Bldrs | 8-5-85 | 10-86 | 1988 |
| MCM 6 N | * * * | | | |
| MCM 7 N | * * * | | | |
| MCM 8 N | | | | |
| MCM 9 N | | | | |
| MCM 10 N | | | | |
| MCM 11 N | 0.04040 | | 4.474 | |
| | | | | |

Authorized: MCM 1 in FY 82, MCM 2 in FY 83, MCM 3-MCM 5 in FY 84, MCM 6-9 in FY 85, MCM 10-11 in FY 86. Programmed: MCM 12-14 in FY88.



Avenger (MCM 1) - artist's rendering

U.S. Navy, 1982



An/SOQ-48 Mine Neutralization System

Honeywell

D: 1,312 tons (fl) S: 14 kts Dim: 68.37 (64.9 wl) × 11.89 × 3.50 (hull)

A: 2/12.7-mm mg (I × 2)

M: MCM 1-2: MCM 3-9: 4 Isotta-Fraschini ID36 SS6V-AM diesels; 2 CP props; 2,600 hp — 1/350-hp Omnithruster; 4 Waukesha L-1616 diesels; 2 CP props; 2,280 hp — 1/350-hp Omnithruster;

Electron Equipt: Radar: 1/SPS-55

Sonar: SQQ-30 (MCM 6 and later: SQQ-32), WQN-1 Channel Finder

Electric: 1,128 kw Range: . . . Man: 5 officers, 67 men

Remarks: To be operated by the Naval Reserve Force. First unit was ordered 29-6-82.

Wooden-hulled, with fiberglass superstructure. Will be able to sweep deep-moored

MINE WARFARE SHIPS (continued)

mines to 180 m as well as sweeping magnetic and acoustic mines. Will have two Honeywell SLQ-48 MNS (Mine Neutralization System), a remote-controlled minehunting and destruction device 3.8 m long by .9 m high, weighing 1,136 kg; powered by two 15-hp hydraulic motors for 6-kt speeds, it will have 1,524 m of control cable. Will carry the SSN-2 precision navigation system and/or the Decca-Racal Hyper-Fix precision radio navaid system. Three additional diesels of the same type as the main engines each drive a 376-kw generator.

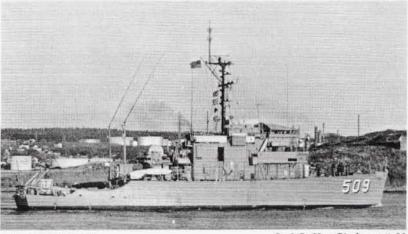
The wooden hull employs four glued layers of 127-mm planking over 254- $\mathrm{mm} imes 457\mathrm{-mm}$ frames spaced at 1.07-m intervals. All structural members are built up from thinner materials, using phenol/resorcinal glue. The hull had to be lengthened by about 1.8 m after construction had begun, due to stability problems. The first unit was also delayed by design problems and the discovery that the main engines rotated opposite to the gear boxes.

This program has been fraught with major delays and cost increases. Contracts to build the FY 85 quartet had not been let by 3-86, and Congress cut the 4 requested for FY 86 authorization to 2. Congress also stipulated that MCM 10 and later must have U.S.-made diesels.

♦ 2 Acme-class oceangoing minesweepers

Bldr: Frank L. Sample, Jr., Boothbay Harbor, Maine

| | Laid down | L | In serv. |
|----------------|-----------|----------|----------|
| MSO 509 Adroit | 18-11-54 | 20-8-55 | 4-3-57 |
| MSO 511 Affray | 24-8-55 | 18-12-56 | 8-8-58 |



Adroit (MSO 509)

L. & L. Van Ginderen, 4-82

D: 682 tons light (818 fl) S: 14 kts Dim: 52.73 × 10.97 × 4.3

A: 2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/SPS-53 - Sonar: SQQ-14

M: 4 Packard 1D-1700 diesels; 2 CP props; 2,280 hp Fuel: 47 tons Range: 3,000/10 Man: 8 officers, 37 men + 4 officers, 33 men Reserves

Remarks: Similar to the Aggressive class below, but slightly larger and originally equipped as Mine Division flagships. Not modernized. At 28-29 years of age, they are the U.S. Navy's newest minesweepers. In Naval Reserve Force.

19 Aggressive class oceangoing minesweepers

| | Bldr | Laid down | L | In serv. |
|--------------------|----------------------|-----------|----------|----------|
| MSO 427 CONSTANT | Fulton SY | 16-8-51 | 14-2-53 | 8-9-54 |
| MSO 433 ENGAGE | Colberg Boat Wks | 7-11-51 | 18-6-53 | 29-6-54 |
| MSO 437 ENHANCE | Martinolich SB | 12-7-52 | 11-10-52 | 16-4-55 |
| MSO 438 ESTEEM | Martinolich SB | 1-9-52 | 20-12-52 | 10-9-55 |
| MSO 439 EXCEL | Higgins, New Orleans | 4-2-53 | 25-9-53 | 24-2-55 |
| MSO 440 EXPLOIT | Higgins, New Orleans | 28-12-51 | 10-4-53 | 31-3-54 |
| MSO 441 EXULTANT | Higgins, New Orleans | 22-5-52 | 6-6-53 | 22-6-54 |
| MSO 442 Fearless | Higgins, New Orleans | 23-7-52 | 17-7-53 | 22-9-54 |
| MSO 443 FIDELITY | Higgins, New Orleans | 15-12-52 | 21-8-53 | 19-1-55 |
| MSO 446 FORTIFY | Seattle, SB & DD | 30-11-51 | 14-2-53 | 16-7-54 |
| MSO 448 ILLUSIVE | Martinolich SB | 23-10-51 | 12-7-52 | 14-11-53 |
| MSO 449 Impervious | Martinolich SB | 18-11-51 | 29-8-52 | 15-7-54 |
| MSO 455 IMPLICIT | Wilmington Boat Wks. | 29-10-51 | 1-8-53 | 10-3-54 |
| MSO 456 INFLICT | Wilmington Boat Wks. | 29-10-51 | 6-10-53 | 11-5-54 |
| MSO 464 PLUCK | Wilmington Boat Wks. | 31-3-52 | 6-2-54 | 11-8-54 |
| MSO 488 CONQUEST | J. M. Martinac | 26-3-53 | 20-5-54 | 20-7-55 |
| MSO 489 GALLANT | J. M. Martinac | 21-5-53 | 4-6-54 | 14-9-55 |
| MSO 490 LEADER | J. M. Martinac | 22-9-53 | 15-9-54 | 16-11-55 |
| MSO 492 PLEDGE | J. M. Martinac | 24-6-54 | 20-7-55 | 20-4-56 |

D: 716 tons light (853 fl) **S:** 14 kts **Dim:** $52.42 \times 10.97 \times 4.2$ **A:** 2/12.7-mm mg (I \times 2) **Range:** 2,400/10

Electron Equipt: Radar: SPS-53E or L-Sonar: SQQ-14

M: 4 Waukesha L-1616 diesels; 2 CP props; 2,400 hp Fuel: 48 tons Man: 8 officers, 70 men (Naval Reserve Force ships: 3 officers, 36 men + 3

officers and 44 men Reserves.



Fearless (MSO 442)

G. Arra, 1982



Leader (MSO 490) - Regular Navy unit

G. Gyssels, 8-83

Remarks: Wooden construction; nonmagnetic, stainless-steel machinery. Except for MSO 443, MSO 448, and MSO 490, which are employed in experimental mine-warfare-related duties, all are operated for the Naval Reserve Force. Ninety-three of the MSO 421 to MSO 508 classes were built; many transferred abroad. Hoist machinery for the SQQ-14 minehunting sonar occupies the position of the former 40-mm AA gun. Twelve of the Aggressive class were re-engined with Waukesha diesels; the remainder (MSO 427, 439, 440, 455, 464, 489, and 492) retained Packard 1D1700 diesels, totaling 2,280 hp; those ships displace 684 tons light, 762 full load. All the survivors were given very thorough rehabilitations during the early to mid-1970s, receiving semi-enclosed bridges, enlarged superstructures abaft the bridge, SQQ-14 minehunting sonars, new communications gear, and upgraded accommodations. The SPS-53 radars are to be replaced by SPS-64(V)9.

In 1975 MSO 440 was equipped with the prototype SSN-2 precise-navigation system for the new MCM class, and in 1980 MSO 443 conducted trials with the prototype SQQ-30 sonar being developed for the MCM 1 class.

MINESWEEPING BOATS

♦ 1 MSB 29 class Bldr: Trumpy, Annapolis (In serv. 1954)



MSB 29

G. Arra, 7-84

MINESWEEPING BOATS (continued)

D: 80 tons (fl) S: 12 kts Dim: 25.0 × 5.8 × 1.7

A: 1/12.7-mm mg Electron Equipt: Radar: 1/Raytheon 1900

M: 2 Packard 2D850 diesels; 2 props; 600 hp Man: 2 officers, 9 men

REMARKS: Enlarged MSB 5; only one built. Based at Charleston.

• 6 MSB 5 class

MSB 15, MSB 16, MSB 25, MSB 28, MSB 41, MSB 51



MSB 16

G. Arra, 1984

D: 30 tons light (44 fl) S: 12 kts Dim: 17.45 × 4.83 × 1.2
 A: 1/12.7-mm mg Electron Equipt: Radar: 1/Raytheon 1900
 M: 2 Packard 2D850 diesels; 2 props; 600 hp Man: 6 tot.

Remarks: Survivors of a class of forty-seven built between 1952 and 1956. Wooden hulls; nonmagnetic machinery. Two Garrett diesel sweep generator sets, except MSB 25: 2 Boeing 502 gas turbine sets. All based at Charleston. Former MSB 7, 13, 17, 35, and 50 were rerated as training craft for the Surface Warfare Officers' School, San Diego, and were to be replaced by ex-YP 654-class training boats late in 1985 and stricken.

2 (+15) COOP (Craft of Opportunity Program) conversions from woodenhulled training craft

| | Bldr | L | In serv. | To COOP |
|--------------------|-----------------------------------|------|----------|---------|
| CT - 4 (ex-YP 659) | Stephens Bros., Stockton, Cal. | 3-58 | 7-58 | 9-85 |
| CT - 5 (ex-YP 660) | Stephens Bros., Stockton, Cal. | 3-58 | 8-58 | 11-85 |

D: 60 tons (fl) S: 13.3 kts Dim: $24.51 \times 5.72 \times 1.60$ Electron Equipt: Radar: 1/SPS-53 — Sonar: towed side-scan array M: 4 G.M. 6-71 diesels; 2 props; 590 hp Man: 9 tot.

Remarks: CT stands for COOP Trainer. Conversions from YP 654-675 series woodenhulled training craft built for the Naval Academy, Annapolis, and the Naval Officer Candidate School, Newport, Rhode Island: two in 1985, four more in 1986, three in 1987, and remainder in 1988. The after deckhouse is being removed, handling gear for a towed precision side-scan sonar added at the stern, and ballast added. Six to convert under FY 86. Each will have four, rotating, 9-man Naval Reserve Force crews, the idea being that three crews will take over previously designated civilian craft in wartime. All will operate on the U.S. East and Gulf coasts. See photo in addenda.

• 5 COOP conversions from miscellaneous craft



U.S. Navy, 1985

Remarks: Conversion from commercial fishing craft captured while running drugs. All to operate on U.S. West Coast. CT 3, placed in service 28-6-85, is a former shrimp boat 30.8 m o.a. Some 66 additional legitimate commercial craft are to be identified for wartime use by the Naval Reserve crews of these units. In peacetime, the 9-man crews will conduct detailed bottom obstacle surveys. The COOP prototype, MSSB 1 (ex-Robin Gail II), has been discarded.

AMPHIBIOUS WARFARE SHIPS

♦ 2 Blue Ridge-class amphibious command ships (SCN 400-65 type)

| | Bldr | Laid down | L | In serv. |
|----------------------|----------------------|-----------|--------|----------|
| LCC 19 Blue Ridge | Philadelphia NSY | 27-2-67 | 4-1-69 | 14-11-70 |
| LCC 20 Mount Whitney | Newport News SB & DD | 8-1-69 | 8-1-70 | 16-1-71 |

Authorized: FY 65 and FY 66



Blue Ridge (LCC 19) - with Mk 15 CIWS fore and aft Ships of the World, 1985



Mt. Whitney (LCC 20)

Skyfotos, 7-83

D: 19,290 tons (fl) S: 21.5 kts

Dim: 189.0 (176.8 wl) × 32.9 (25.0 wl) × 7.5 (8.8 max.)

A: 4/76.2-mm DP (II × 2) -2/Mk 25 BPDMS for Sea Sparrow (VIII × 2)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-48, 1/SPS-40, 2/Mk 115 EW: SLQ-32(V)3, Mk 36 SRBOC chaff RL (IV × 4)

TACAN: SRN-6

M: 1 set G.E. GT; 1 prop; 22,000 hp Fuel: 2,800 tons

Boilers: 2 Foster-Wheeler; 42.3 kg/cm², 467°C Range: 13,000/16 Man: 41 officers, 734 men + flag group: 200 officers, 500 men + 150 troops

Remarks: LCC 19 is the flagship of the Seventh Fleet; LCC 20 is the flagship of the Second Fleet. These ships have a good cruising speed (20 knots) and excellent satellite communications and analysis systems: ACIS (Amphibious Command Information System); NIPS (Naval Intelligence Processing System); NTDS, and photographic laboratories and document-publication facilities. Three LCP, two LCVP landing craft, and one 10-m personnel launch are carried in Welin davits. No helicopter hangar, but they do have a landing pad at the stern. Same machinery and basic hull form as the *Iwo Jima*-class LPH. Air-conditioned; fin stabilizers. Two Mk 56 fire-control systems for the 76.2-mm guns deleted in 1978; two Mk 115 fire-control systems for Sea Sparrow retained. Kevlar plastic armor to be added, as will be the Tactical Flag Command Center. LCC 19 received Mk 15 CIWS in 1985, with stern

♦ 0 (+2+8 or 9) Wasp-class helicopter/dock landing ships

sponson and bow bulwarks lengthening the ship some 5 m. overall.

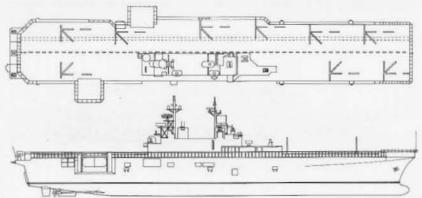
| | Bldr | Laid down | L | In serv. |
|-------------|---------------------|-----------|------|----------|
| LHD 1 WASP | Ingalls, Pascagoula | 30-5-85 | 8-87 | 31-3-89 |
| LHD 2 Essex | | | | 6-91 |
| LHD 3 N | | | | 3-92 |

Authorized: LHD 1 in FY 84, LHD 2 in FY 86. Programmed: LHD 3 in FY 88, LHD 4 in FY 89, LHD 5 in FY 91.

D: 25,800 tons light (40,533 fl) S: 24 kts

Dim: 257.30 (237.14 wl) × 42.67 (32.31 wl) × 8.13

AMPHIBIOUS WARFARE SHIPS (continued)



Wasp (LHD 1)

A.D. Baker III, 12-83



Wasp (LHD 1) - artist's rendering

Ingalls SB/Hamalrath, 1982

A: Assault mode: 42/CH-46 (or fewer CH-53) helicopters and 6/AV-8B Harriers; carrier mode: 20/AV-8B Harriers and 4-6/SH-60B ASW helicopters—2/Mod. Mk 29 launchers for 6 Sea Sparrow (XVI × 2)—3/20-mm Mk 15 CIWS AA (I × 3) 8/12.7-mm mg (I × 8)

CIWS AA (I × 3) 8/12.7-mm mg (I × 8) Electron Equipt: Radar: 1/SPS-64(V)9, 1/SPS-67, 1/SPS-49(V)5, 1/SPS-52C, 1/Mk 23 TAS, 2/Mk 57 Mod. 2 (on Mk 91 f.c.s.), 1/SPN-35A, 1/SPN-43B

EW: SLQ-32(V)3, Mk 36 SRBOC (VI × 4 or 8)

M: 2 sets GT: 2 props; 77,000 hp (71,000 sust.) Fuel: 6,200 tons Boilers: 2; 49.3 kg/cm², 482°C Electric: 14,600 kw

Range: 9,500/20 Man: 98 officers, 61 chief petty officers, 921 men, plus 1,873 troops (+200 additional emergency troops accom.)

Remarks: Design based on that of the LHA 1 class, but intended to be convertible from an assault ship to an ASW ship with Harrier V/STOL fighters for ground assault. Because of the desire to maximize the number of deck spots, no ski-jump V/STOL ramp will be fitted. Differences from the LHA 1 include: use of an LSD/LPD-type lowering stern gate, vice the sectional, rising gate of the LHA; provision for three LCAC in a single-bay, narrower docking well (which can alternatively hold up to 12 LCM(6)); using larger 34-ton elevators, with the stern elevator relocated to starboard; internal stowage for ship's boats; a bulbous forefoot to the bow; a squared-off flight deck forward (made possible by the omission of the 127-mm guns); using HY 100 steel to construct the stronger flight deck; additional cargo elevators; a lower, narrower, and longer island; provision of 3 hospitals, totaling 600 beds; a narrower vehicle ramp to the flight deck; and better ballistic protection. They will have 2,127 m² of vehicle parking space and 3,087 m³ of dry cargo space. Some 1,232 tons of JP-5 aviation fuel and about 50 tons of vehicle fuel will be carried. The SYS-2(V)3 data system will control defensive weapons. An additional 200 troops can be carried in an emergency.

| • 5 Tarawa-class amphibious assault ships (SCB 410 type) | Bldr: Ingalls |
|--|---------------|
| SB, Litton Ind., Pascagoula, Miss. | |

| | Laid down | L | In serv. |
|---|-----------|----------|----------|
| LHA 1 TARAWA | 15-11-71 | 1-12-73 | 29-5-76 |
| LHA 2 SAIPAN | 21-7-72 | 18-7-74 | 15-10-77 |
| LHA 3 Belleau Wood (ex-Philippine Sea) | 5-3-73 | 11-4-77 | 23-9-78 |
| LHA 4 Nassau (ex-Leyte Gulf) | 13-8-73 | 21-1-78 | 28-7-79 |
| LHA 5 Peleliu (ex-Da Nang, ex-Khe Sanh) | 12-11-76 | 25-11-78 | 3-5-80 |

Authorized: 1 in FY 69, 2 in FY 70, 2 in FY 71



Saipan (LHA 2)—with MK 15 CIWS on deckhouse in place of forward Sea Sparrow launcher Pradignac & Leo, 3-85



Nassau (LHA 4)—with CIWS just before bridge, and fwd Sea Sparrow retained
Maritime Photographic, 10-85



Nassau (LHA 4)—showing stern door opening aft to hangar, and port elevator in stowed position

L. & L. Van Ginderen, 10-85



Belleau Wood (LHA 3)

LSPH S. Given, R.A.N., 5-84



Tarawa (LHA 1)

AMPHIBIOUS WARFARE SHIPS (continued)

D: 25,120 tons light (39,400 fl) S: 24 kts

Dim: $254.20 (237.14 \text{ pp}) \times 40.23 (32.31 \text{ wl}) \times 7.92$

A: 2 (except LHA 2: 1)/Mk 25 Sea Sparrow launchers (VIII × 2) — 3/127-mm 54-cal. Mk 45 DP (I × 3) — LHA 2, 4: 1/20-mm Mk 15 CIWS—all: 6/20-mm Mk 67 AA (I × 6) — typical: 16/CH-46, 6/CH-53 and 4/UH-1 helicopters (maximum: 38 CH-46 equivalents)

Electron Equipt: Radar: 1/SPS-53, 1/SPS-10F, 1/SPS-40B, 1/SPS-52B, 1/SPN-35, 1/SPG-60, 1/SPQ-9A, 2/Mk 115 EW: LHA 1, 2: SLQ-32(V)3; others: WLR-1; all: 4/Mk 36

SRBOC chaff (VI × 4) TACAN: URN-20; (LHA 1, 2: URN-25)

M: 2 sets Westinghouse GT; 2 props; 77,000 hp (70,000 sust.); 900-hp bow-thruster

Electric: 14,600 kw (4 × 2,500 kw, 2 × 2,000 kw, 4 × 150 kw) Boilers: 2 Combustion Engineering V2M-VS; 49.3 kg/cm², 482°C

Fuel: 5,900 tons

Range: 10,000/20 Man: 94 officers, 920 men + 1,924 troops

REMARKS: The LHA is a multipurpose assault transport, a combination of LPH and LPD. It has the general profile of an aircraft carrier, with its superstructure to starboard, flight deck, helicopter elevators to port (folding) and aft, and an 80×23.4 -m well deck for landing craft (up to four LCU 1610 class). Two LCM (6) and two LCP are stowed on deck. Vehicle stowage garage forward of docking well totals 3,134 m2, and the palletized cargo holds total 3,311 m³. Carry approx. 1,200 tons JP-5 fuel for helicopters. The boilers are the largest ever installed in a U.S. Navy ship; the propulsion plant is highly automated. Communications systems include satellite antennas and a large, long-range, high-frequency, log-periodic array. LHA-4 carried 20 AV-8A Harrier V/STOL attack fighters as well as transport helicopters during a 1981 exercise. Very complete 300-bed hospital and mortuary facilities are fitted. All troops have bunks. Completely air-conditioned. Four additional units were canceled in 1971. The 127-mm guns are aboard primarily to provide shore fire support, but can also be used for AA; they are controlled by a Mk 86 Mod. 4 fire-control system with SPQ-9A radar for surface fire, SPG-60 for AA,, and two unmanned electro-optical backup directors. Each Mk 25 Sea Sparrow launcher has an associated Mk 115 radar fire-control system with Mk 71 directors. All scheduled to receive two 20-mm Vulcan/Phalanx gatling AA and SLQ-32(V)3 in place of their present EW systems; in LHA 2, the single CIWS fitted to date has replaced the forward Sea Sparrow launcher, while in LHA 4, the CIWS is mounted abaft the missile launcher. Kevlar plastic armor added to all 1982-85. A bulbous forefoot (as on the Wasp-class LHD) is to be backfitted to improve endurance, and one 127-mm gun is to be removed to make room for a second Mk 15

AMPHIBIOUS ASSAULT HELICOPTER CARRIERS

♦ 7 Iwo Jima class (SCB 157, LPH 12: SCB 401-66)

| | Bldr | Laid down | L | In serv. |
|--------------------|---------------------|-----------|---------|----------|
| LPH 2 Iwo Jima | Puget Sound NSY | 2-4-59 | 17-9-60 | 26-8-61 |
| LPH 3 OKINAWA | Philadelphia NSY | 1-4-60 | 14-8-61 | 14-4-62 |
| LPH 7 GUADALCANAL | Philadelphia NSY | 1-9-61 | 16-3-63 | 20-7-63 |
| LPH 9 GUAM | Philadelphia NSY | 15-11-62 | 22-8-64 | 16-1-65 |
| LPH 10 TRIPOLI | Ingalls, Pascagoula | 15-6-64 | 31-7-65 | 6-8-66 |
| LPH 11 NEW ORLEANS | Philadelphia NSY | 1-3-66 | 3-2-68 | 16-11-68 |
| LPH 12 Inchon | Ingalls, Pascagoula | 8-4-68 | 24-5-69 | 20-6-70 |

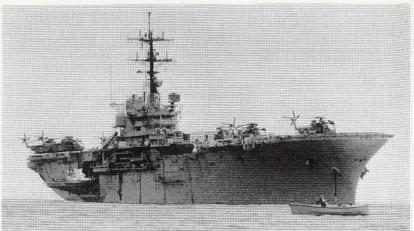
Authorized: 1 each year in FY 59-63, FY 65, FY 66

D: 11,000 tons light (17,515-18,300 fl) **S:** 23 kts **Dim:** 183.6 (169.5 wl) × 31.7 (25.5 wl) × 7.9 (hull)

A: 4/76.2-mm DP (II × 2) — 2/Mk 25 Sea Sparrow launchers (VIII × 2) — 2/20mm Mk 15 CIWS (I × 2) — 20-24/CH-46 helicopters — 4/CH-53 heavy helicopters — 4/UH-1 utility or AH-1 attack helicopters



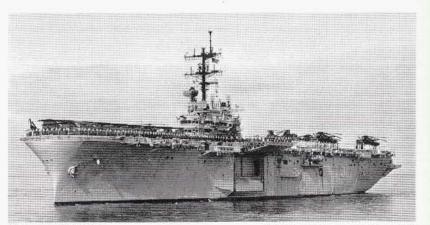
Inchon (LPH 12) — with CIWS and Sea Sparrow launcher on port quarter, LCVP in davits, no SPN-35 L. Grazioli, 9-84



Okinawa (LPH 3) — with MH-53E minesweeping helicopters, CIWS in lieu of both Sea Sparrow launchers G. Arra, 6-84



Guadalcanal (LPH 7) — SPN-35 abaft island, CIWs added on sponsons G. Arra, 10-85



Okinawa (LPH 3)

LSPH E. Pitman, R.A.N., 9-85

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40, 1/SPN-35 (not in LPH 12), SPN-43

EW: SLQ-32(V)3 (except LPH 10: WLR-1) Mk 36 SRBOC chaff RL (VI \times 4)

TACAN: SRN-6 or URN-25

M: 1 set GT; 1 prop; 23,000 hp Electric: 6,500

Boilers: 4 Combustion Engineering (LPH 9: Babcock & Wilcox); 42.3 kg/cm²,

Man: 47 officers, 605 men + 190 officers, 1,900 troops

Remarks: The ships can also act as carriers for RH-53 minesweeping helicopters or for AV-8B Harriers. One folding side elevator forward, to port; one to starboard, aft of the island; 70-m hangar. Excellent medical facilities (300 beds). LPH 9 has an ASCAC (Air-Surface Classification and Analysis Center). LPH 12, to a slightly different design, carries two LCVP in davits. Two Mk 63 GFCS removed. LPH 2, 3, 7, and 12 had 2 Mk 15 CIWS added by 1985; initially CIWS replaced the Sea Sparrow launchers, but now it is being mounted (as in LPH 12), one on a sponson on the port quarter and one on a sponson forward, to starboard. Two Sea Sparrow launchers and two twin 76.2-mm gunmounts being retained in all.

AMPHIBIOUS TRANSPORTS, DOCK

♦ 11 Austin class (SCB 187B type)

| | Bldr | Laid down | L | In serv. |
|-----------------|---------------------|-----------|---------|----------|
| LPD 4 Austin | New York NSY | 4-2-63 | 27-6-64 | 6-2-55 |
| LPD 5 OGDEN | New York NSY | 4-2-63 | 27-6-64 | 19-6-65 |
| LPD 6 DULUTH | New York NSY | 18-12-63 | 14-8-65 | 18-12-65 |
| LPD 7 CLEVELAND | Ingalls, Pascagoula | 30-11-64 | 7-5-66 | 21-4-67 |

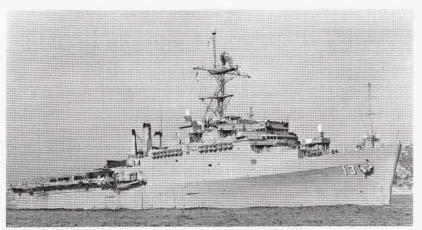
AMPHIBIOUS TRANSPORTS, DOCK (continued)

| LPD 8 DUBUQUE | Ingalls, Pascagoula | 25-1-65 | 6-8-66 | 1-9-67 |
|-------------------|----------------------|----------|----------|----------|
| LPD 9 DENVER | Lockheed SB, Seattle | 7-2-64 | 23-1-65 | 26-10-68 |
| LPD 10 JUNEAU | Lockheed SB, Seattle | 23-1-65 | 12-2-66 | 12-7-69 |
| LPD 12 Shreveport | Lockheed SB, Seattle | 27-12-65 | 25-10-66 | 12-2-70 |
| LPD 13 Nashville | Lockheed SB, Seattle | 14-3-66 | 7-10-67 | 14-2-70 |
| LPD 14 TRENTON | Lockheed SB, Seattle | 8-8-66 | 3-8-68 | 6-3-71 |
| LPD 15 PONCE | Lockheed SB, Seattle | 31-10-66 | 20-5-70 | 10-7-71 |

Authorized: 3 in FY 62, 4 in FY 63, 3 in FY 64, 2 in FY 65

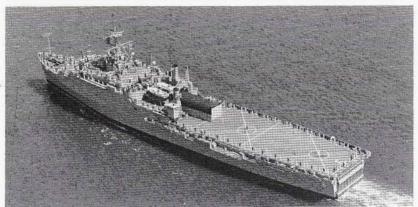


Ponce (LPD 15) - non-flagship, with 2 Mk 15 CIWS L. & L. Van Ginderen, 3-84



Nashville (LPD 13) - flagship version, with 2 Mk 15 CIWS

Pradignac & Leo, 3-85



Duluth (LPD 6) - non-flagship version, still with WLR-1

G. Arra, 8-85



Ogden (LPD 5) - showing stern door

G. Arra, 10-85



Cleveland (LPD 7)

LSPH E. Pitman, R.A.N., 9-85

D: 11,050 tons (16,550-17,595 fl) S: 21 kts

Dim: 173.4 × 25.6 (hull) × 7.0-7.2

A: 4/76.2-mm DP (II \times 2) — LPD 12, 13, 15: 2/20-mm Mk 15 CIWS (I \times 2) Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40

EW: SLQ-32(V)1 (LPD 6: WLR-1); all: Mk 36 SRBOC chaff $RL(VI \times 4)$

TACAN: SRN-6 or URN-25

M: 2 sets de Laval GT; 2 props; 24,000 hp Boilers: 2 Foster-Wheeler (LPD 5, LPD 12: Babcock & Wilcox), 42.3 kg/cm²,

M: 24 officers, 373 men (+90 staff in LPD 7 to LPD 13) +930 troops (840 in LPD 7 to LPD 13)

Remarks: Lengthened version of the Raleigh class. Combination LSD and assault transports; well deck 120 × 15.24; helicopter platform. Either one LCU and three LCM(6) or nine LCM(6) or four LCM(8) or twenty-eight LVT can be carried in the well deck. Six cranes, one 8.15-ton elevator, two forklifts. Up to six CH-46 helicopters can be carried for brief periods, but the small, telescoping hangar can accommodate only one utility helicopter. LPD 7 to LPD 13 are fitted for flagship duty and have one additional superstructure deck. All have lost their one Mk 56 and two Mk 63 gunfire control, leaving the 76.2-mm guns locally controlled. Two twin 76.2-mm DP removed 1977-78 (port fwd, stbd aft). Two 20-mm Mk 15 CIWS Vulcan/Phalanx AA being added, as well as four Mk 36 SRBOC chaff launchers and the SLQ-32(V)1 EW system. Sister Coronado (LPD 11) redesignated AGF 11, 1-10-80. These ships are programmed to receive a SLEP (Service Life Extension Program) modernization, now delayed to FY 89-93, to extend their service lives by 10-15 years. Will be able to support one LCAC, CH-46 helicopters, and will receive SPS-67 in place of SPS-10, new pumps and compressors, and increased vehicle and cargo space.

2 Raleigh class

| | Bldr | Laid*down | L | In serv. |
|-----------------|--------------|-----------|---------|----------|
| LPD 1 RALEIGH | New York NSY | 23-6-60 | 17-3-62 | 8-9-62 |
| LPD 2 Vancouver | New York NSY | 19-11-60 | 15-9-62 | 11-5-63 |

Authorized: FY 59 and FY 60



Raleigh (LPD 1)

L. & L. Van Ginderen, 3-84

D: 8,276 tons ight (14,650 fl) S: 21 kts Dim: 159.0 (152.4 wl) × 25.60 (hull) × 6.7

AMPHIBIOUS TRANSPORTS, DOCK (continued)

A: 6/76.2-mm DP (II × 3)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40—TACAN: SRN-6 EW: SLQ-32(V)1, Mk 36 SRBOC chaff RL (VI×4)

M: 2 de Laval GT; 2 props; 24,000 hp Electric: 3,600 kw

Boilers: 2 Babcock & Wilcox; 40.8 kg/cm2, 467°C

Man: 30 officers, 460 men + 930 troops

Remarks: Sister La Salle (LPD 3), modified as flagship for CoMideastFor in the Indian Ocean and reclassified AGF 3, had an additional superstructure deck like LPD 7 to LPD 13. Docking well, 51.2 × 15.2 m, is shorter than on Austin class. Emphasis in LPD is on personnel capacity, in LSD on dock capacity; the flight deck, which forms the top of the well deck, can handle up to six CH-46 helicopters; there is no hangar. The port, fwd twin 76.2-mm gunmount and all fire-control systems were removed 1977-78. These ships are not planned to receive SLEP modernization.

DOCK LANDING SHIPS

◆ 0 (+0+3+...) LSD 49 class

Bldr Laid down L In serv.
LSD 49 circa 1994

Remarks: Essentially a cargo variant of the Whidbey Island class, with well-deck space for only two LCAC, and an increase in vehicle and cargo capacity. will displace about 16,600 tons (fl) and carry 504 troops; other data as for LSD 41. First unit programmed for FY 89, with one per year thereafter, but as LSD 41 class is cheaper, it may continue in procurement.

• 2 (+6) Whidbey Island class

| | Bldr | Laid down | L | In serv. |
|-----------------------|-------------------|-----------|---------|----------|
| LSD 41 WHIDBEY ISLAND | Lockheed, Seattle | 4-8-81 | 10-6-83 | 9-2-85 |
| LSD 42 GERMANTOWN | Lockheed, Seattle | 5-8-82 | 29-6-84 | 8-2-86 |
| LSD 43 FORT MCHENRY | Lockheed, Seattle | 10-6-83 | 1-2-86 | 6-87 |
| LSD 44 N | Avondale SY | 5-86 | 6-87 | 7-88 |
| LSD 45 N | Avondale SY | 10-86 | * × × | 12-88 |
| LSD 46 N | Avondale SY | | | 5-89 |
| LSD 47 N | Avondale SY | * * * | | 1990 |
| LSD 48 N | Avondale SY | 4 4 4 | * * * | 1990 |
| | | | | |

Authorized: LSD 41 in FY 81, LSD 42 in FY 82, LSD 43 in FY 83, LSD 44 in FY 84, LSD 45, 46 in FY 85, LSD 47, 48 in FY 86.

D: 11,274 tons (15,165 fl) S: 22 kts Dim: 185,80(176.80 wl) \times 25.60 \times 5.84 A: 2/20-mm Mk 15 CIWS AA (I \times 2) — 2/20-mm AA Mk 67 (I \times 2) — 8/12.7-mm mg (I \times 8)

Electron Equipt: Radar: 1/LN-66, 1/SPS-67, 1/SPS-49—TACAN: URN-25 EW: SLQ-32(V)1, Mk 36 SRBOC chaff RL (VI × 4)

M: 4 Colt-Pielstick 16 PC2.5V400 diesels; 2 CP props; 41,600 hp (33,000 sust.)
Electric: 9,200 kw Man: 24 officers, 391 men + 504 troops (including 166 staff)
Fuel: 2,000 tons Range: Approx. 8,000/20

Remarks: The design was originally to have been a near-repeat of the LSD 36 class, but a requirement to be able to hold four LCAC (Air-Cushion Landing Craft) in the docking well, which measures 134.0 × 15.24 m clear, necessitated the change. The helicopter deck is raised above the docking well (which can also hold 21 LCM(6) or 3 LCU or 64 LVTP) in order to provide all-around ventilation for the gas turbine-engined LCACs. There are two landing spots for up to CH-53-sized helicopters but no hangar facilities. Forward of the docking well is 1,214 m² of vehicle parking space and 149 m³ of palletized cargo. Carry 90 tons JP-5 fuel for helicopters. Carry one LCM(6),

two LCPL Mk-II, and one LCVP on deck, handled by one 20-ton and one 60-ton crane. The FY 85 and later ships will have the Mk 88 Mod. 0 Bushmaster 25-mm gun in place of the 20-mm Mk 67 AA.



Whidbey Island (LSD 41)

Lockheed, 9-84



Whidbey Island (LSD 41)

Lockheed, 9-84



Whidbey Island (LSD 41)

Lockheed, 9-84

DOCK LANDING SHIPS (continued)



Germantown (LSD 42) - fitting out

G. Arra, 10-85

• 5 Anchorage class (SCN 404-65 and 66 types)

| | Bldr | Laid down | L | In serv. |
|---------------------|------------------------|-----------|----------|----------|
| LSD 36 Anchorage | Ingalls, Pascagoula | 13-3-67 | 5-5-68 | 15-3-69 |
| LSD 37 PORTLAND | Gen'l Dynamics, Quincy | 21-9-67 | 20-12-69 | 3-10-70 |
| LSD 38 PENSACOLA | Gen'l Dynamics, Quincy | 12-3-69 | 11-7-70 | 27-3-71 |
| LSD 39 MOUNT VERNON | Gen'l Dynamics, Quincy | 29-1-70 | 17-4-71 | 13-5-72 |
| LSD 40 FORT FISHER | Gen'l Dynamics, Quincy | 15-7-70 | 22-4-72 | 12-9-72 |

Authorized: 1 in FY 65, 3 in FY 66, 1 in FY 67



Pensacola (LSD 38) - open 76.2-mm gunmounts, SLQ-32, 2 CIWS G. Arra, 10-85



Fort Fisher (LSD 40) - enclosed gunmounts

LSPH E. Pitman, R.A.N., 9-85

D: 8,600 tons light (14,000 fl) **S:** 22 kts **Dim:** 168.66 (162.8 wl) × 25.9 × 5.6(6.1 max.)

A: 6/76.2-mm DP (II × 3) - LSD 38: 2/20-mm Mk 15 CIWS (I × 2)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40

EW: SLQ-32(V)1, Mk 36 SRBOC chaff RL (VI × 4)

M: 2 sets de Laval GT; 2 props; 24,000 hp

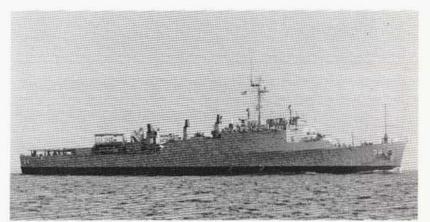
Boilers: 2 foster-Wheeler (LSD 36: Combustion Eng.); 42.3 kg/cm², 467°C

Fuel: 2,750 tons Man: 20 officers, 430 men + 338 troops

Remarks: Carry assault landing craft in the well deck (113.28 × 15.24); can accommodate 3 LCU or 15 LCM(6) or 8 LCM(8) or 50 LVT. One or two LCM(6) stowed on deck, handled by the two 50-ton cranes. Have 1,115 m² of vehicle parking space forward of the docking well. The helicopter deck is removable; 90 tons JP-5 fuel carried for helicopters. The starboard forward twin 76.2-mm removed to allow later mounting of two 20-mm Mk 15 CIWS (one to go aft). Mk 56 and Mk 63 directors removed in 1977.

| 8 Thomaston class (SCB 75 type) | | Bldr: Ingalls, Pascagoula, Miss. | | |
|---|-----------|----------------------------------|----------|------------|
| | Laid down | L | In serv. | To Reserve |
| LSD 28 Thomaston | 3-3-53 | 9-2-54 | 17-9-54 | 5-9-84 |
| LSD 29 PLYMOUTH ROCK | 5-5-53 | 7-5-54 | 29-11-54 | 30-9-83 |
| LSD 30 FORT SNELLING | 17-8-53 | 16-7-54 | 24-1-55 | 28-9-84 |
| LSD 31 POINT DEFIANCE | 23-11-53 | 28-9-54 | 31-3-55 | 30-9-83 |
| LSD 32 Spiegel Grove* | 7-9-54 | 10-11-55 | 8-6-56 | |
| LSD 33 Alamo* | 11-10-54 | 20-1-56 | 24-8-56 | |
| LSD 34 Hermitage* | 11-4-55 | 12-6-56 | 14-12-56 | |
| LSD 35 MONTICELLO | 6-6-55 | 10-8-56 | 29-3-57 | 1-10-85 |

Authorized: 4 in FY 52, 2 in FY 54, 2 in FY 55 - *Active



Hermitage (LSD 34)—with Mk 15 CIWS

G. Arra, 10-85



Alamo (LSD 33)

G. Arra, 1984

D: 6,880 tons (12,150 fl) S: 22.5 kts Dim: 155.45 \times 25.6 \times 5.4 (5.8 max.) A: 6/76.2-mm DP (II \times 3) — LSD 34 also: 2/20-mm Mk 15 CIWS (I \times 2)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-6 M: 2 sets G.E. GT; 2 props; 24,000 hp Range: 10,000/20 Boilers: 2 Babcock & Wilcox, 40.8 kg/cm² pressure

Fuel: 1,390 tons Man: 20 officers, 385 men + 318 troops

Remarks: Portable helicopter platform. Can carry 3 LCU, 18 LCM(6), or 9 LCM(8) in 119.2×14.6 well deck, with 975 m² of vehicle parking space forward of the docking well. Two 50-ton cranes. Originally had 16 76.2-mm DP (II \times 8). Now have one mount forward to starboard, and two amidships. Two Mk 56 and Mk 63 gunfire-control systems removed in 1977. Last active ships with SPS-6 air-search radar. To be replaced by new LSD 41 class. Being decommissioned to National Defense Reserve Fleet for retention for possible emergency mobilization.

TANK LANDING SHIPS

• 20 Newport class (SCN 405-66 type)

Bldrs: LST 1179: Philadelphia NSY; others: National Steel SB, San Diego

| | Laid down | L | In serv. |
|--------------------|-----------|--------|----------|
| LST 1179 NEWPORT | 1-11-66 | 3-2-68 | 7-6-69 |
| LST 1180 Manitowoc | 1-2-67 | 4-6-69 | 24-1-70 |

TANK LANDING SHIPS (continued)

| LST 1181 SUMTER | 14-11-67 | 13-12-69 | 20-6-70 |
|-----------------------------|----------|----------|----------|
| LST 1182 FRESNO | 16-12-67 | 28-9-68 | 22-11-69 |
| LST 1183 PEORIA | 22-2-68 | 23-11-68 | 21-2-70 |
| LST 1184 FREDERICK | 13-4-68 | 8-3-69 | 11-4-70 |
| LST 1185 SCHENECTADY | 2-8-68 | 24-5-69 | 13-6-70 |
| LST 1186 CAYUGA | 28-9-68 | 12-7-69 | 8-8-70 |
| LST 1187 Tuscaloosa | 23-11-68 | 6-9-69 | 24-10-70 |
| LST 1188 SAGINAW | 24-5-69 | 7-2-70 | 23-1-71 |
| LST 1189 SAN BERNARDINO | 12-7-69 | 28-3-70 | 27-3-71 |
| LST 1190 BOULDER* | 6-9-69 | 22-5-70 | 4-6-71 |
| LST 1191 RACINE* | 13-12-69 | 15-8-70 | 9-7-71 |
| LST 1192 SPARTANBURG COUNTY | 7-2-70 | 11-11-70 | 1-9-71 |
| LST 1193 FAIRFAX COUNTY | 28-3-70 | 19-12-70 | 16-10-71 |
| LST 1194 La Moure County | 22-5-70 | 13-2-71 | 18-12-71 |
| LST 1195 BARBOUR COUNTY | 15-8-70 | 15-5-71 | 12-2-72 |
| LST 1196 HARLAN COUNTY | 7-11-70 | 24-7-71 | 8-4-72 |
| LST 1197 BARNSTABLE COUNTY | 19-12-70 | 2-1071 | 27-5-72 |
| LST 1198 BRISTOL COUNTY | 13-2-71 | 4-12-71 | 5-8-72 |
| | | | |

Authorized: 1 in FY 65, 8 in FY 66, 11 in FY 67-*Naval Reserve Force

D: 4,973 tons light (8,450 fl) S: 22 kts (20 sust.)

Dim: 159.2 (171.3 over horns) × 21.18 × 5.3 (aft) × 1.80 (fwd)

A: 4/76.2-mm DP (II \times 2) — LST 1179, 1180, 1181, 1192, 1194 also: 1/20-mm Mk 15 CIWS

Electron Equipt: Radar: 1/LN-66, 1/SPS-10 — see remarks



La Moure County (LST 1194) - with CIWS atop pilothouse

G. Arra, 10-84



Saginaw (LST 1188)

Skyfotos, 3-83



Spartanburg County (LST 1192) — with CIWS atop pilothouse, causeway pontoon sections along sides, aft Pradignac & Leo, 3-85



Bristol County (LST 1198)

G. Arra, 1984

M: 6 Alco 16-251 (LST 1179 to LST 1181: G.M. 16-645-E5) diesels; 2 CP props; 16,500 hp

Fuel: 1,750 tons Man: 12 officers, 174 men + 20/411 troops

Remarks: LST 1190 transferred to the Naval Reserve Force 1-12-80 and LST 1191 on 15-1-81. Can carry 500 tons of cargo on 1,765 m² of deck space, and up to 431 troops (386 normal). A side-thruster propeller forward helps when marrying to a causeway. There is a mobile aluminum ramp forward (34 tons), which is linked to the tank deck by a second ramp. These ramps can carry 75 tons. Aft is a helicopter platform and a stern door for loading and unloading vehicles. Four pontoon causeway sections can be carried on the hull sides. Mk 63 radar gunfire-control systems removed 1977-78. SLQ-32(V)1 and chaff RL are not planned. LST 1179 has two navigational radars. Some receiving 1 Mk 15 CIWS 20-mm gatling AA atop pilothouse in an interim installation; still plan to carry 2 CIWS and delete 76.2-mm guns.

Note: Three surviving DeSoto County tank landing ships have been in the National Defense Reserve Fleet since 1972: Suffolk County (LST 1173), Wood County (LST 1178), and Lorain County (LST 1177).

AMPHIBIOUS CARGO SHIPS

• 5 Charleston class

| | Bldr | Laid down | L | In serv. |
|--------------------|--------------|-----------|----------|----------|
| LKA 113 CHARLESTON | Newport News | 5-12-66 | 2-12-67 | 14-12-68 |
| LKA 114 DURHAM | Newport News | 10-7-67 | 29-3-68 | 24-5-69 |
| LKA 115 MOBILE | Newport News | 15-1-68 | 19-10-68 | 29-9-69 |
| LKA 116 St. Louis | Newport News | 3-4-68 | 4-1-69 | 22-11-69 |
| LKA 117 EL PASO | Newport News | 22-10-68 | 17-5-69 | 17-1-70 |

Authorized: 4 in FY 65, 1 in FY 66



Charleston (LKA 113)

G. Gyssels, 3-84



Durham (LKA 114)

G. Arra, 1984

D: 10,000 tons (18,600 fl) S: 20 kts Dim: 175.6 (167.6 wl) × 18.9 × 8.5 (max.)

A: 6/76.2-mm DP (II × 3)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10

EW: SLQ-32(V)1, Mk 36 SRBOC chaff RL (VI \times 2)

M: 1 set Westinghous GT; 1 prop; 22,000 hp

Boilers: 2 Combustion Engineering; 42.2 kg/cm², 443°C

Fuel: 2,400 tons Man: 25 officers, 366 men + 15 officers, 211 troops

Remarks: All but LKA 116 transferred to the Naval Reserve Force, LKA 113 on 21-11-79, LKA 114 on 1-10-79, LKA 115 on 1-9-80, and LKA 117 on 1-3-81. Returned to Regular Navy: LKA 113 on 13-2-83, LKA 114 on 1-10-82, LKA 115 on 1-7-83 and LKA 117 on 1-10-82. Air-conditioned. Machinery control is automatic. Helicopter

AMPHIBIOUS CARGO SHIPS (continued)

platform. Fittings include two 70-ton heavy-lift booms, two 40-ton booms, and eight 15-ton booms. Normally carry four LCM(8), five LCM(6), two LCVP, and two LCP. Two Mk 56 radar gunfire-control systems and one twin 76.2-mm gunmount removed 1977-78; to receive two 20-mm Vulcan/Phalanx AA, but not until late 1980s.

Note: The Mariner-class amphibious cargo ship Tulare (LKA 112) was stricken on 1-8-81 and is retained in the National Defense Reserve Fleet by the Maritime Administration.

UTILITY LANDING CRAFT

38(+2) LCU 1610 class (SCB 149, 149B, and 406 types)
 Bidrs: See remarks (In serv. 6-59 to 12-71, except LCU 1680, 81: 9-86)

| LCU 1616 | LCU 1629 to 1635 | ASDV 1 (ex-LCU 1621) |
|----------|----------------------|----------------------|
| LCU 1617 | LCU 1643 to LCU 1646 | ASDV 2 (ex-LCU 1623) |
| LCU 1619 | LCU 1648 to LCU 1666 | ASDV 3 (ex-LCU 1628) |

LCU 1624 LCU 1680 LCU 1627 LCU 1681



LCU 1649

L. & L. Van Ginderen, 3-84



LCU 1641 — minelaying workboat at Charleston, So. Carolina; note crane to port, rail over stern

G. Arra, 1984



ASDV 1 (ASDV 2, 3 similar) - midships area decked over

G. Arra, 1984

D: 190 tons (390 fl) S: 11 kts Dim: $41.07 \times 9.07 \times 2.08$ A: 2/12.7-mm mg (I \times 2) Electron Equipt: Radar: 1/navigational M: 4 G.M. 6-71 diesels; 2 Kort-nozzle props; 1,200 hp Fuel: 13 tons Range: 1,200/11 Man: 6 men + 8 troops

Remarks: LCU 1616-1619, LCU 1623, LCU 1624 delivered 6-59 to 9-60 by Gunderson Bros., Portland, Oregon; LCU 1621, 1626, 1629, and 1630 delivered 6-60 to 1968 by Southern Shipbuilding, Slidell, La.; LCU 1627, 1628, 1631-1635 built by General Ship & Eng. Wks., East Boston, Mass.; LCU 1643-1645 delivered 8-67 to 1969 by Marinette Marine, Marinette, Wisc.; LCU 1646-1666 delivered 1969-70 by Defoe SB, Bay City, Wisc.; LCU 1667-1670 built by General Ship & Eng. Wks.; LCU 1680, 81 ordered 10-85 from Moss Point Marine, Escatanapa, Miss., for delivery 9-86 to Naval

Reserve Force units. The similar, aluminum-hulled LCU 1637 is now a seagoing training device at Roosevelt Roads, Puerto Rico. Missing numbers have either been redesignated as yard craft (YFU—see later pages) or transferred to the U.S. Army (LCU 1667–1679). LCU 1621 has vertical cycloidal propellers. Cargo capacity is 143 tons; cargo space, 30.5 × 5.5 m. Usually unarmed; can be equipped with an LN-66 or other small navigation radar. Minor differences as construction progressed: five others serve as workboats: LCU 1613, 1614, 1637, 1641, 1647; of these, three have been designated as ASDV (Auxiliary Swimmer Delivery Vehicle) and assigned to Special Boat Unit 22; they have a crew of 13 and carry a decompression chamber. Twelve of these extremely useful craft are to be given a Service Life Extension Program (SLEP) modernization.

1 LCU 1466 class (SCB 25 type)

LCU 1473 (In serv. 5-55)

D: 180 tons (347 fl) S: 8 kts Dim: 35.08 × 10.36 × 1.6(aft)
M: 3 Gray Marine 64YTL diesels; 3 props; 675 hp Electric: 40 kw
Fuel: 11 tons Range: 1,200/6 Man: 6 men + 8 troops

Remarks: Built between 1953 and 1958. Can carry 167 tons. Engines and bridge aft. Improved version of LCU 501 class. Missing numbers have been either transferred, sunk, or converted to service craft (YFU). LCU 1473 is operated by the Naval Reserve Force at Buffalo, NY (to be replaced 1986 by a new unit); two sisters, LCU 1564 and LCU 1578, are classified as utility boats, but have not been redesignated YFU. A number of additional units of the class are operated by the U.S. Army. LCU 501 (ex-LCT(6))-class landing craft LCU 1232 (ex-YFU 67) survives at Subic Bay: 134 tons (349 ft).

MINOR LANDING CRAFT

 3(+30+56) LCAC class Bldr: Bell Aerospace/Textron-Halter Marine and Lockheed SB, Pascagoula, Mississippi

Authorized: 3 in FY 82, 3 in FY 83, 6 in FY 84, 9 in FY 85, 12 in FY 86 Programmed: 9 each in FY 88-91



LCAC 1

Bell Aerospace Textron, 12-84



LCAC 1

Bell Aerospace Textron, 12-84

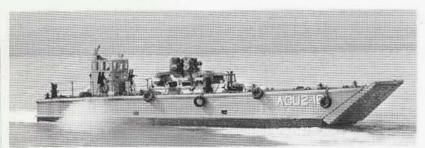
D: 88 tons light (200 fl) S: 54 kts (40 when loaded)
Dim: 26.8 (24.7 hull) × 14.3 (13.4 hull) × 0.87 (at rest)
A: None Electron Equipt: Radar: 1/navigational

M: 4 Avco TF40B gas turbines (2 for lift); 2 shrouded airscrews; 12,444 hp Fuel: 6.2 tons Range: 223/48; 200/40(loaded Man: 4 crew + 24 troops

Remarks: Design derived from that of the JEFF-B prototype. Original program for 101 or more has been cut to 90 total. Cargo capacity: 60 tons normal/75 overload. To be carried by the LSD 41, LPD 17, LHD 1, and LHA 1 classes. Bow ramp is 8.8 m wide, stern ramp 4.6 m. The deck has 168-m² parking area. First unit launched 2-5-84 and placed in service 24-12-84; second unit launched 18-1-85 and delivered 19-7-85. First 12 by Bell-Halter, numbers 13-14 ordered 10-85 from Lockheed, with orders for 7 other FY 85 units delayed. Prototype has experienced numerous design and reliability problems. LCAC 1-6 to operate as ACU 5 from Camp Pendleton, Cal., in 1986, LCAC 7-12 as ACU 4 from Little Creek, Va., in 1988.

MINOR LANDING CRAFT (continued)

- 23(+15) LCM(8) Mk 4 class (In serv. 1967-79; 1985-86)
- 54 LCM(8) Mk 3 class (In serv. 1953-55)
- ◆ 25 LCM(8) Mk-2 class (In serv. 1967-69)

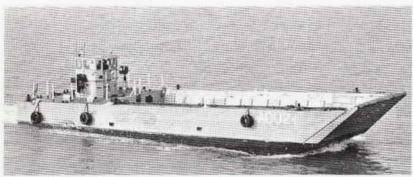


LCM(8) Mk-2 class 16 of ACU 2—note mounts for 2/12.7-mm mg abreast pilothouse L. & L. Van Ginderen, 3-84

D: 34 tons light (121 fl) S: 12 kts Dim: 22.43 × 6.40 × 1.40 (aft) M: 4 G.M. 6-71 diesels; 2 props; 590 hp Range: 150/12

Remarks: Began building in 1969. Aluminum version of LCM(8) Mk 1. Cargo: 58 tons. Some have two G.M. 12V71 diesels. Ten were to be built under FY 82 for use aboard the new T-AKX maritime prepositioning ships; canceled. Eight were ordered from Marine Power Co., Seattle, under FY 83; 10 authorized (some for T-AKX) under FY 84; 3 authorized under FY 85. Ten ordered 10-85 from Twin City shipyards.

• 6 LCM(8) Mk 1 class (In serv. 1954)



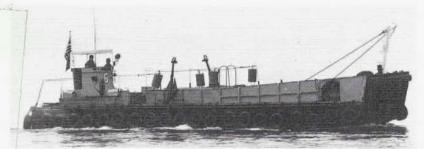
LCM(8) Mod. 1 class of ACU 2

L. & L. Van Ginderen, 3-82

D: 56 tons light (116 fl) **S**: 9 kts **Dim**: 22.43 × 6.42 × 1.57 **M**: 4 G.M. 6-71 diesels; 2 props; 620 hp **Range**: 140/9

Remarks: Built between 1949 and 1976. Cargo: 54 tons. U.S. Army also uses large numbers of this type.

· approx. 106 LCM(6) class



LCM(6) - rigged as push tug and beach retrieval craft

G. Gyssels, 1982



Standard LCM(6) - attached to Naval Air Base, San Diego

W. Donko, 7-84

D: 24 tons (56 fl) S: 10 kts Dim: 17.07 × 4.37 × 1.17 (aft) M: 2 Gray Marine 64HN9 (G.M. V71 on Mk-3) diesels; 2 props; 330 hp Range: 130/10

Remarks: Designed during World War II and built between 1952 and 1980. Many used in utility roles. Cargo; 30 tons. Two new examples requested under FY 85 for delivery 1-86. Majority (67) in service are Mk-3, delivered 1977-80; another 36 are Mk-2, delivered 1960-71.

◆ 136 LCVP Mk-7 class (In serv. 1966-69)

D: 13 tons(fl) S: 9 kts Dim: 10.90 × 3.21 × 1.04 (aft) M: 1 Gray Marine 64HN9 diesel; 225 hp Range: 110/9

Remarks: Glass-reinforced plastic hulls. Can carry 36 troops or 3.5 tons cargo.

• 131 LCPL Mk-12 class

D: 13 tons (fl) S: 19 kts Dim: 10.98 × 3.97 × 1.13

Electron Equipt: Radar: 1/LN-66

M: 1 G.M. 8V71 TI diesel; 350-425 hp Range: 150/. . . Man: 3 crew + 17 passengers

Remarks: Plastic construction. For use as control craft. Carried abroad LHA, LPD, LSD, LST classes, etc. Total includes 75 LCP(L) Mk-12 ordered from Watercraft America, Edgewater, Fla., in 30-6-83, with 23 more on option; first delivered 8-84 and last by 9-85. Earlier Mk-12 delivered 9-81 to 4-84. In FY 85, 48 more planned for ordering, plus 50 in FY 86 and 16 in FY 87-88, for an eventual total of 214.

- ◆ 88 LCPL Mk-11 (In serv. 1960-67)
- ◆ 33 LCPL Mk-4 (In serv. 1968-71)

Remarks: Generally similar to LCPL Mk-12, except steel construction. Mk-11 employs G.M. 6121T diesel, 350 hp. All Mk-11 and Mk-4 to be replaced by Mk-12 by 1988.

◆ 2 amphibious warfare warping tugs Bldr: Campbell Machine Wks., San Diego, Cal. (In serv. 4-70)

LWT 1 LWT 2

D: 61 tons light **S**: 9 kts **Dim**: $25.9 \times 6.7 \times 2.1$

M: 2 G.M. 8V71 diesels; 2 steerable props; 420 hp Man: 6 tot.

Remarks: Aluminum construction, intended for handling causeway sections and shipto-beach fuel lines. Series production not pursued.

5 powered causeway section side-loadable warping tugs

SLWT 1-5 (In serv. 1969)

SWCM 1

D: 81.5 tons (light) S: 9.5 kts Dim: 27.61 × 6.48 × 0.81

M: 2 G.M. 8V71 TI diesels; 2 Peerless centrifugal waterjet pumps; 850 hp

Remarks: Essentially standard Navy "lighted pontoon" barges with a built-in waterjet propulsion section. Intended for vehicle or container offloading for larger ships and for deploying the Amphibious Assault Fuel Supply Facility to a beachhead.

SPECIAL WARFARE CRAFT

♦ 0(+1+18) Special Warfare Craft, Medium (SWCM) Bldr: R.M.I., National City, Cal.

Laid down L In serv.



D: 83 tons light (115 fl) S: 35 kts

Dim: 23.93 × 10.67 × 1.50 (0.60 on cushion)

A: 2/25-mm Sea Vulcan gatling AA — Stinger hand-held SAMs

Electron Equipt: Radar: 1/SPS-64(V)9

EW: Argo AR700-1 intercept, Mk 34 RBOC RL (VI × 2)

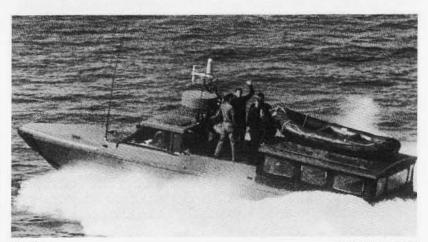
M: 2 G.M. Allison 16V149 TI diesels; 2 props, 3,600 hp—2 G.M. 8V92 TA diesel lift fan engines; 680 hp

Range: . . . Man: 3 officers, 6 men + 16 special forces troops

SPECIAL WARFARE CRAFT (continued)

Remarks: Originally typed PBM-Patrol Boat, Multimission. Intended to support Navy SEAL special forces teams. Prototype ordered 10-5-85. Plan nine for each coast, plus one for training. Lift engines power six lift fans. Rigid sidewall air-cushion vehicle, with flexible rubber seals at bow and stern. Will have a Magnavox optronic sensor based on the H.S.A. LIOD. Three additional units in FY 86, followed by 6 each in FY 87 and FY 88 and three in FY 89; however, program delays in design stage have slowed progress.

♦ 70 SWCL "Seafox" class Bldr: Uniflite, Bellingham, Wash. (In serv. 1980-83)



Seafox

U.S. Navy, 1980

D: 11.3 tons (fl) S: 30+ kts Dim: 11.0 × 3.0 × 0.84 A: Small arms Electron Equipt: Radar: 1/LN-66 M: 2 G.M. 6V-92 TA diesels; 2 props; 930 hp Man: 3 tot.

Remarks: Glass-reinforced plastic construction. SWCL = Special Warfare Craft, Light. Intended for use by SEAL Team commandos; can stow a rubber raft. Have secure voice communications gear, IFF, night-vision equipment, and an echosounder.

 22 Mini-ATC class Bldr: Sewart Seacraft, Berwick, La. (In serv. 1972-73)



Mini-ATC

Sewart Seacraft, 2-72

D: 9.3 tons light (13 fl) S: 28.5 kts Dim: 10.97 × 3.89 × 0.30

A: Up to 4/12.7-mm mg (I \times 4) -1/40-mm Mk 19 grenade launcher -1/M60mortar

M: 2 G.M. 8V53N diesels; 2 Jacuzzi 14YJ waterjets; 566 hp

Range: 37/28

Man: 2 crew + 15 troops

Remarks: Aluminum construction. Rectangular platform; bow ramp. Seven weaponmounting positions. Can carry an LN-66 radar. Very quiet in operation. All operated by Naval Reserve Force Special Boat Units.

Note: SEAL teams also operate 4-man Mk-7, 6-man Mk-8, and 2-man Mk-9 swimmer delivery submersibles.

AUXILIARY SHIPS

Note: This section includes only ships that are subordinate to the U.S. Navy proper. Ships assigned to the civilian-manned Military Sealift Command are listed separately in a following section. Below, ships are listed alphabetically by their U.S. Navy type designation, i.e., AD, AF, AG, etc.

♦ 6 Samuel Gompers-class destroyer tenders (SCB 244 type)

Bldrs: AD 37 and AD 38, Puget Sound NSY; AD 41 to AD 44, National Steel, San Diego

| | Laid down | L | in serv. |
|----------------------|-----------|---------|----------|
| AD 37 SAMUEL GOMPERS | 9-7-64 | 14-5-66 | 1-7-67 |
| AD 38 PUGET SOUND | 15-2-65 | 16-9-66 | 27-4-68 |

| AD 41 YELLOWSTONE | 27-6-77 | 27-1-79 | 28-6-80 |
|-------------------|---------|---------|----------|
| AD 42 Acadia | 14-2-78 | 28-7-79 | 6-6-81 |
| AD 43 CAPE COD | 27-1-79 | 2-8-80 | 17-4-82 |
| AD 44 SHENANDOAH | 2-8-80 | 6-2-82 | 17-12-83 |

Authorized: 1 in FY 64, 1 in FY 65, 1 in FY 75, 1 in FY 76, 1 in FY 77, 1 in FY 79



Samuel Gompers (AD 37)

L. & L. Van Ginderen, 3-83



Puget Sound (AD 38) - when 6th Fleet flagship, with special SATCOMM antenna atop lattice mast, URN-25 TACAN atop foremast L. & L. Van Ginderen, 7-84



Shenandoah (AD 44)

L. & L. Van Ginderen, 5-84

D: AD 37, 38: 13,600 tons light (20,500 fl); AD 41-44: 13,318 tons light (20,224 fl) S: 20 kts Dim: 196.29 × 25.91 × 6.86

A: AD 37, 38: 4/20-mm AA (I × 4); others: 2/20-mm AA (I × 2); all: 2/40-mm Mk 19 grenade launchers

Electron Equipt: Radar: 1/LN-66, 1/SPS-10 — TACAN: AD 41: URN-25

M: 1 set de Laval GT; 1 prop; 20,000 hp Electric: 12,000 kw

Boilers: 2 Combustion Engineering; 43.6 kg/cm2, 462°C

Man: AD 37, 38: 43 officers, 1,233 men; AD 41-44: 87 officers, 1,508 men

Remarks: Similar to L.Y. Spear-class submarine tenders; AD 41 and later considered a separate class (SCB 700 type) and have facilities to carry and overhaul LM-2500 gas turbines, being tailored to support DD 963, DDG 993, and FFG 7-class ships. All have helo deck aft, no hangar (except AD 38). Maintenance ships for guided-missile cruisers and destroyers. Two 30-ton cranes; two 3.5-ton traveling cranes. Excellent workshops for electronic equipment and surface-to-air missiles. Carry 60,000 different types of repair parts in 65 storerooms totaling 1,795 m3. Originally planned to carry Sea Sparrow in AD 41 and later. One 127-mm DP removed from AD 38 in 1979. AD 38 became 6th Fleet flagship in 7-80, having received an extra mast to support a special SATCOMM antenna (all have the standard WSC-3 SATCOMM installation, with two OE-82 drum-shaped antennas); relieved by Coronado (AGF 11) in 8-85.

♦ 1 Klondike-class destroyer tender—in reserve

Bldr Laid down In serv. AD 24 EVERGLADES 26-6-44 28-1-45 Los Angeles SB 25-5-51

D: 8,165 tons (14,700 fl) S: 18 kts Dim: 149.96 (141.73 pp) × 21.25 × 8.3

A: None Electron Equipt: Radar: 1/SPS-10

M: 1 set Westinghouse GT; 1 prop; 8,500 hp Electric: 3,600 kw Boilers: 2 Foster-Wheeler; 30.6 kg/cm2, 393°C

Fuel: 2,415 tons Man: 800-918 tot.



Everglades (AD 24) - in reserve

A.D. Baker, 8-84

Remarks: In reserve, used as an accommodations ship at Philadelphia. Built on C-3 cargo hull. Helicopter deck; hangar for DASH.

3 Dixie-class destroyer tenders

| | Bldr | Laid down | L | In serv. |
|----------------|-------------|-----------|---------|----------|
| AD 15 PRAIRIE | New York SB | 7-12-38 | 9-12-39 | 5-8-40 |
| AD 18 SIERRA | Tampa SB | 31-12-41 | 23-2-43 | 20-3-44 |
| AD 19 YOSEMITE | Tampa SB | 19-1-42 | 16-5-43 | 25-3-44 |



Prairie (AD 15)

L. & L. Van Ginderen, 9-84

D: 9,450 tons (17,190 fl) S: 18 kts Dim: 161.7 × 22.33 × 7.8 A: 4/20-mm AA (I × 4) Electron Equipt: Radar: 1/LN-66 1/SPS-10

M: 2 sets GT; 2 props; 11,000 hp Electric: 4,100 kw Boilers: 4 Babcock & Wilcox; 28.4 kg/cm², 382°C

Fuel: 3,680 tons Range: 12,200/12

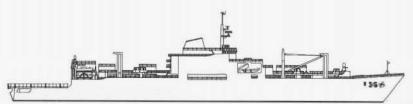
Man: 37 officers, 893 men

Remarks: The design of these support ships goes back to pre-1939 programs. Modernized under the FRAM program from 1959 to 1963 to serve as maintenance vessels for guided-missile ships, they have workshops, spare parts for missiles, and two 20-ton rotating cranes. Helicopter deck. 127-mm guns removed 1974-75. Sisters Dixie (AD 14) struck 15-6-82 for scrap, Piedmont (AD 17) struck 30-9-82; sold to Turkey 18-10-82.

♦ 0 (+0+5) new-construction ammunition ships

Laid down In serv. AE 36 N.

Programmed: 1 in FY 88, 2 each in FY 90, 91



AE 36 class - provisional sketch

A. D. Baker III, 1985

D: 22,790 tons (fl) S: 20 kts Dim: $175.9 \times 26.8 \times 8.5$ A: 2/20-mm Mk 15 CIWS AA (I \times 2) -2/25-mm Mk 88 AA (I \times 2) -1 or 2/UH-46 helicopters

Electron Equipt: Radar: 1/SPS-64(V)9, 1/SPS-67-TACAN: URN-25 EW: SLQ-32(V)1, Mk 36 SRBOC (VI × 2)

M: 1 or 2 G.E. LM-2500 gas turbines or diesels; 1 CP prop; 25,000 hp

Man: 30 officers, 420 men Range: 10,000/20

Remarks: Intended to replace AE 21-25. Construction authorization requests delayed from FY 86 by fiscal constraints. Will carry 6,000 tons ammunition and other cargo and will have a helicopter hangar and flight deck.

♦ 7 Kilauea-class ammunition ships (SCB 703 type)

| | Bldr | Laid down | L | In serv. |
|---------------------|------------------------|-----------|----------|----------|
| AE 27 BUTTE | Gen. Dynamics | 21-7-66 | 9-8-67 | 14-12-68 |
| AE 28 SANTA BARBARA | Bethlehem, Sparrows Pt | 20-12-66 | 23-1-68 | 11-7-70 |
| AE 29 MOUNT HOOD | Bethlehem Sparrows Pt | 8-5-67 | 17-7-68 | 1-5-71 |
| AE 32 FLINT | Ingalls, Pascagoula | 4-8-69 | 9-11-70 | 20-11-71 |
| AE 33 Shasta | Ingalls, Pascagoula | 10-11-69 | 3-4-71 | 26-2-72 |
| AE 34 MOUNT BAKER | Ingalls, Pascagoula | 10-5-70 | 23-10-71 | 22-7-72 |
| AE 35 Kiska | Ingalls, Pascagoula | 4-8-71 | 11-3-72 | 16-12-72 |
| | | | | |

Authorized: 2 in FY 65, 2 in FY 66, 2 in FY 67, 2 in FY 68

D: 9,338 tons light (19,937 fl) **S:** 20 kts **Dim:** $171.9 \times 24.7 \times 8.5$ **A:** 4/76.2-mm DP (II \times 2) — AE 32-35: 2/20-mm Mk 15 CIWS AA (I \times 2) — all: 2/UH-46 helicopters

Electron Equipt: Radar: 1/LN-66, 1/SPS-10 — TACAN: URN-25 EW: SLQ-32(V)1, Mk 36 SRBOC chaff RL (VI × 2)

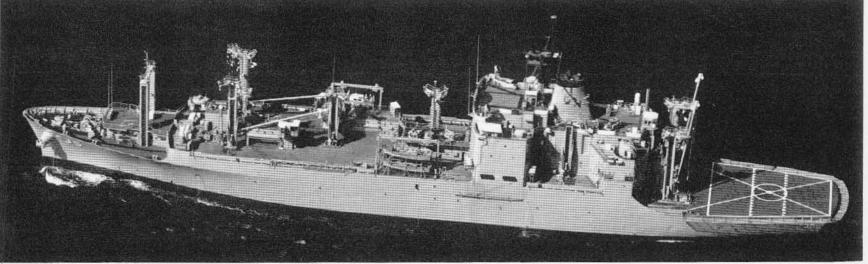
M: 1 set G.E. GT; 1 prop; 22,000 hp Electric: 5,500 kw

Boilers: 3 Foster-Wheeler; 42.3 kg/cm², 467°C Man: 28 officers, 373 men



Shasta (AE 33) - with Mk 15 CIWS added

W. Donko, 7-84



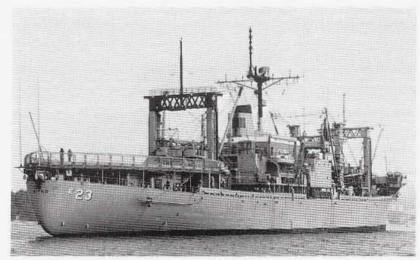
Kiska (AE 35) - with Mk 15 CIWS to port fwd., and to starboard amidships

Remarks: Sister Kilauea (AE 26) disarmed and transferred to Military Sealift Command 1-10-80. Sophisticated FAST rapid-replenishment system. Twin hangar and flight deck aft. Two twin 76.2-mm mounts and both Mk 56 directors removed; two 20-mm Vulcan/Phalanx AA amidships to be added to AE 32-35. Mk 36 SRBOC chaff-flare launchers to be added to all. AE 32 and later have a larger bulbous forefoot to the bow. Carry cargo fuel for transfer, as well as ammunition. Several solid transfer rigs deactivated to reduce crew size.

3 Nitro-class ammunition ships (SCB 114A type)
 Corp., Sparrows Point, Md.

Bldr: Bethlehem Steel

| | Laid down | L | In serv. |
|-----------------|-----------|---------|----------|
| AE 23 NITRO | 20-5-57 | 26-6-58 | 1-5-59 |
| AE 24 Pyro | 21-10-57 | 5-11-58 | 24-7-59 |
| AE 25 HALBARALA | 10-3-58 | 17-2-59 | 3-11-59 |



Nitro (AE 23) - open gunmounts

G. Gyssels, 5-85



Pyro (AE 24) - with enclosed gun houses

G. Arra, 1984

D: 13,990 tons (17,450 fl) S: 20 kts Dim: 156.1 × 22.0 × 8.8

A: 4/76.2-mm DP (II × 2) -4/12.7-mm mg (I × 4)

Electron Equipt: Radar: 1/LN-66, 1/SPS-10

M: 1 set Bethlehem GT; 1 prop; 16,000 hp

Boilers: 2 Combustion Eng.; 43.9 kg/cm², 454°C Man: 17 officers, 312 men

Remarks: All had landing platforms for cargo helicopters added aft during the 1960s. Mk 63 gun directors removed, 1977-78. SPS-6 radar removed. AE 24 transferred to Naval Reserve Force 1-9-80 but returned to regular Navy 1-1-82. AE 24 and 25 have enclosed gun houses. Planned to receive SLQ-32(V)1 and Mk 36 SRBOC EW equipment, but had not by 1985.

◆ 2 Suribachi-class ammunition ships (SCB 114 type) Bldr: Bethlehem Steel Corp., Sparrows Point, Md.

| | Laid down | L | In serv. |
|-----------------|-----------|---------|----------|
| AE 21 SURIBACHI | 16-5-55 | 3-5-56 | 30-3-57 |
| AE 22 MAUNA KEA | 31-1-55 | 2-11-55 | 17-11-56 |



Mauna Kea (AE 22) — note gun arrangement on forecastle

L. & L. Van Ginderen, 10-84

D: 14,000 tons (17,000 fl) S: 21 kts Dim: 156.1 × 22.0 × 8.8

A: 4/76.2-mm DP (II × 2)

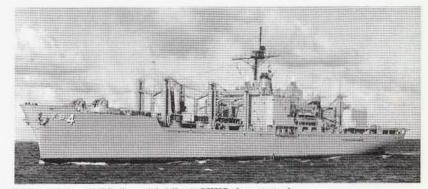
Electron Equipt: Radar: 1/LN-66, SPS-10

EW: SLQ-32(V)1, Mk 36 SRBOC chaff RL (VI \times 2) M: 1 set GT; 1 prop; 16,000 hp Boilers: 2 Combustion Eng.; 42.2 kg/cm², 440°C Electric: 12,550 kw Man: 17 officers, 312 men

Remarks: SPS-6 radar removed. Gunmounts superfiring, whereas AE 23 to AE 25 have them side by side. Mk 63 gunfire-control systems removed, 1977-78. AE 22 conducted minelaying trials with Mk 55 aircraft mines laid from portable rails during 1983.

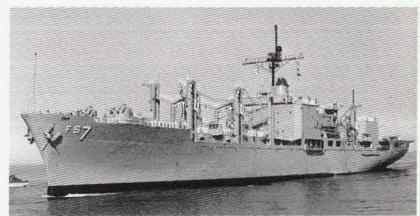
♦ 7 Mars-class combat stores ships (SCB 208 type) Bldr: National Steel & SB Co., San Diego

| | Laid down | L | In serv. |
|---------------------|-----------|----------|----------|
| AFS 1 Mars | 5-5-62 | 15-6-63 | 21-12-63 |
| AFS 2 SYLVANIA | 18-8-62 | 10-8-63 | 11-7-64 |
| AFS 3 NIAGARA FALLS | 22-5-65 | 25-3-66 | 29-4-67 |
| AFS 4 WHITE PLAINS | 2-10-65 | 23-7-66 | 23-11-68 |
| AFS 5 CONCORD | 26-3-66 | 17-12-66 | 27-11-68 |
| AFS 6 SAN DIEGO | 11-3-67 | 13-4-68 | 24-5-69 |
| AFS 7 SAN JOSE | 8-3-69 | 13-12-69 | 23-10-70 |
| | | | |



White Plains (AFS 4) - with Mk 15 CIWS abreast stack

LSPH E. Pitman, R.A.N., 7-85



San Jose (AFS 7)

LSPH E. Pitman, R.A.N., 7-85

Authorized: 1 in FY 61, 1 in FY 62, 1 in FY 64, 2 in FY 65, 1 in FY 66, 1 in FY 67

D: 9,200 tons light (16,070 fl) S: 20 kts Dim: 177.08 (161.54 pp) × 24.08 × 7.32

A: 4/76.2-mm DP (II × 2) — AFS 4: 2/20-mm Mk 15 CIWS (I × 2) — all: 2/UH-46 helicopters

Electron Equipt: Radar: 1/LN-66, 1/SPS-10 — TACAN: SRN-6 EW: SLQ-32(V)1, Mk 36 SRBOC chaff RL (VI × 2)

M: 1 set de Laval (AFS 6: Westinghouse) GT; 1 prop; 22,000 hp Electric: 4,800 kw

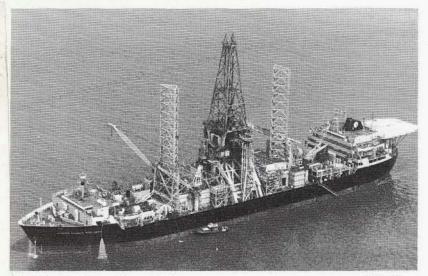
Boilers: 3 Babcock & Wilcox; 40.8 kg/cm², 440°C Man: 45 officers, 441 men

Remarks: Helicopter platform and hangar. Four M-shaped cargo masts with constant-tension equipment; transfer from the supply ship to the receiving ship takes 90 seconds. Five holds (1 and 5 for spare parts, 3 and 4 for provisions, 2 for aviation parts) have only two hatches. Eleven hoists, which raise up to 5.5 tons, link the decks; several others feed into the helicopter area. Ten loading areas (five on each side) and palletized cargo help in the control of replenishment. There are four refrigerated compartments, and three for the storage of dried provisions. Some 25,000 types of spare parts are divided between 40,000 bins and racks and are accounted for by five data-processing machines. 16,597 m³ total stores volume. Quarters air-conditioned. Draw 2.7 m more aft than forward. One boiler always in reserve. SPS-40 radar, Mk 56 fire-control directors and two twin 76.2-mm mounts amidships removed. Two Vulcan/Phalanx are to be added during the late 1980s/early 1990s. Remaining twin gunmounts on the forecastle are enclosed.

Note: Three ex-Royal Fleet Auxiliaries of the "Ness" class are operated by the Military Sealift Command as T-AFS 8, 9, and 10 and are described on a later page.

♦ 1 former salvage ship Bldr: Sun Ship, Chester, Pa.

AG 193 (ex-Hughes Glomar Explorer) (In serv. 7-73)



AG 193—as Hughes Glomar Explorer

U.S. Navy

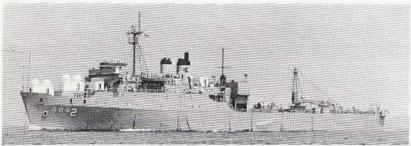
D: 63,300 tons (fl) S: 10.8 kts Dim: 188.6 (169.8 pp) × 35.3 × 14.3
 M: 5 Nordberg 16-cyl. diesels; 6 G.E. electric motors, 2 props; 13,200 hp — 6 side-thrusters
 Man: 178 tot.

Remarks: Built for the Central Intelligence Agency for the sole purpose of recovering a sunken Soviet Golf-class ballistic-missile submarine; given the "cover" role as a deep-sea mining ship (for which she was also useable) by the titular owners, the Summa Corporation. Transferred to Navy ownership in 9-76 and laid up at Suisun Bay, California, was chartered in June 1978 for thirteen months by Global Marine Corporation for deep-water mineral exploration. In late 1979 it was announced that she would be placed at the disposal of the National Science Foundation and would embark on a ten-year research program as a deep-sea drilling ship for the Ocean Marine Drilling Program. When conversion was completed, the ship would have been able to drill to depths of 6,100 meters beneath the sea floor while operating in 4,000 – 5,500 meters of water. The project was unfortunately not funded, and AG 193 was returned to the Navy 25-4-80 and transferred to the Maritime Administration for mothballing at Suisun Bay, California. The ship's associated support barge was reacquired from the Environmental Protection Agency in 10-82 and laid up.

1 auxiliary deep-submergence support ship

Bldr: Maryland SB & DD

AGDS 2 Point Loma (ex-*Point Barrow*, T-AKD 1) L In serv. 25-5-57 28-2-58



Point Loma (AGDS 2) - note radomes near bow

Range: 8,800/10 Man: 11 officers, 111 men

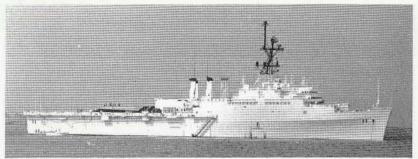
G. Arra, 1984

D: 8,000 tons light (12,430 fl) S: 12 kts Dim: 150.0 (144.8 pp) \times 22.6 \times 5.8 Electron Equipt: Radar: 1/SPS-53, 1/SPS-10 M: 2 sets Westinghouse GT; 2 props; 3,000 hp Boilers: 2 Foster-Wheeler; 32 kg/cm², 400°C

Remarks: Maritime Commission S2-ST-23A design. Built for Arctic supply and configured like a landing ship, dock (LSD). Served in MSC until 28-9-72, when placed in reserve. Transferred to the Navy on 28-2-74, renamed, renumbered, and reactivated as a tender for deep-submergence vehicles, recommissioning 30-4-75. Operates from San Diego in support of the Trident SSBN program; 4 "Golf Ball" spherical antennas on white-painted deckhouses on bow. Crew has 5 women officers, 25% enlisted women. Carries 275 tons of gasoline as flotation liquid for submersibles. Two cranes. Second stack added for diesel-generator exhausts.

♦ 1 Austin-class auxiliary command ship, ex-amphibious transport, dock

Bldr Laid down L In serv.
AGF 11 CORONADO Lockheed SB, Seattle 3-5-65 30-7-66 23-5-70
(ex-LPD 11)



Coronado (AGF 11) - now painted gray

L. & L. Van Ginderen, 7-83

D: 11,050 tons (17,000 fl) S: 21 kts Dim: 173.4×25.6 (hull) \times 7.2 A: 4/76.2-mm DP (II \times 2) — 2/20-mm Mk 15 CIWS (I \times 2) Electron Equipt: Radar: 1/LN-66, 1/SPS-10, 1/SPS-40 — TACAN: URN-20 EW: SLQ-32(V)2, Mk 36 SRBOC chaff RL (VI \times 2)

M: 2 sets de Laval GT; 2 props; 24,000 hp Boilers: 2 Foster-Wheeler; 42.3 kg/cm², 467°C Man: 27 officers, 446 men + staff: 120 officers, 47 men

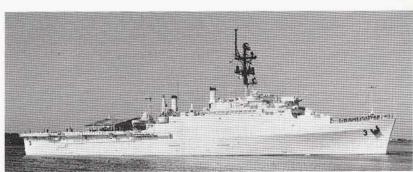
REMARKS: Redesignated AGF on 1-10-80, initially only as a temporary relief for La Salle (AGF 3), but now retained in a command ship role. Communications enhanced over that of rest of class, but otherwise not as extensively altered as AGF 3. Replaced Puget Sound (AD 38) as flagship, Sixth Fleet, 8-85 to 6-86. Other remarks under Austin class pertain.

• 1 Raleigh-class auxiliary command ship

Bldr Laid down L In serv.

AGF 3 La Salle (ex-LPD 3) New York NSY 2-4-62 3-8-63 22-2-64

Authorized: FY 61



La Salle (AGF 3) — white-painted

G. Arra, 1983

EW: SLQ-32(V)2, WLR-1, Mk 36 SRBOC chaff RL M: 2 sets de Laval GT; 2 props; 24,000 hp

Boilers: 2 Babcock & Wilcox; 42.2 kg/cm², 467°C -Electric: 3,600 kw Man: 18 officers, 369 men + flag staff: 12 officers, 47 men

Remarks: Ex-landing platform, dock (LPD). Since redesignated 1-7-72 employed as flagship of Commander, Middle East Force. Painted white. Well deck used for ship's boats. Helicopter hangar for one SH-3 built on flight deck, to port, with shelter for ceremonial activities to starboard. One Mk 56 and two Mk 63 gunfire-control systems removed 1977-78; lost one gunmount but gained two 20-mm Mk 15 CIWS during major overhaul commencing 27-1-81; resumed flagship duty 13-3-83. A large parabolic dish SATCOMM antenna is mounted on the first mast platform.

• 1 Dolphin class (SCB 207 type) research submarine

Bldr Laid down L In serv.

AGSS 555 DOLPHIN Portsmouth NSY 9-11-62 8-6-68 17-8-69

Authorized: FY 61



Dolphin (AGSS 555)

G. Arra, 3-85

D: 860/950 tons S: 7.5/10 or 15 (see Remarks) Dim: $50.29 \times 5.92 \times 4.9$ Electron Equipt: Sonar: BQS-15, bow passive array, towed array, BQR-2

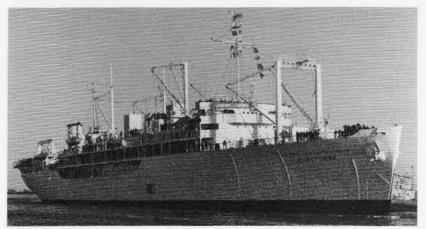
M: Diesel-electric, 2 G.M. 12V71 diesels; 1 prop; 1,650 hp

Endurance: 14 days (12 hours sub.) Man: 3 officers, 26 men, 5 scientists

Remarks: The pressure hull is a perfect cylinder, 5.49 m in diameter, strongly braced and closed at the forward and after ends by two hemispheric bulkheads. Used for deep-diving tests as well as acoustic and oceanographic experiments. Single torpedo tube removed in 1970. Scientific payload of 12 tons. Using two 165 cell, 250-volt, lead-acid batteries, 10 knots can be reached when submerged; when silver-zinc batteries are substituted, the speed is 15 knots. Very quiet machinery. Has four mini-computers for scientific-data processing. Several scientific, passive multihydrophone arrays are fitted at the bow, and acoustic arrays can be towed at up to 4,000 feet behind the craft. Most support is shore-based. Home-ported at San Diego. Has a portable SPS-53 radar for surface navigation.

◆ 1 hospital ship—in reserve

Bldr Laid down L In serv.
AH 17 SANCTUARY Sun SB & DD . . . 15-8-44 20-6-45



Sanctuary (AH 17)

U.S. Navy, 1974

D: 11,141 tons (15,400 ft) S: 18.3 kts Dim: 158.5 (151.18 pp) × 21.79 × 7.32

Electron Equipt: Radar: 1/SPS-53, 1/SPS-10B M: 1 set G.E. GT; 1 prop; 9,000 hp Electric: 2,400 kw Boilers: 2 Babcock & Wilcox, 31.7 kg/cm², 396°C

Fuel: 2,055 tons Man: 70 officers, 460 men

REMARKS: In reserve. Survivor of a class of six; built on C4-S-B2 cargo-ship hull. Converted 15-12-71 to 18-11-72 as a dependent support ship for service at Piraeus, Greece. Has 74-bed hospital that can be expanded to 300. In addition to medical facilities, had stores, entertainment facilities, etc. Could carry 50 officers and 120 enlisted medical personnel. Change in government in Greece canceled plan; decommissioned 28-3-74, having not filled intended purpose. Probably soon to be discarded.

Note: Two new hospital-ship conversions, Mercy (T-AH 19) and Comfort (T-AH 20) are described in the Military Sealift Command section.

• 5 Cimarron-class oilers (SCB 379 type)

| 1. | Bldr | Laid down | L | In serv. |
|--------------------|-------------|-----------|---------|----------|
| AO 177 CIMARRON | Avondale SY | 18-5-78 | 28-4-79 | 10-1-81 |
| AO 178 Monongahela | Avondale SY | 15-8-78 | 4-8-79 | 5-9-81 |
| AO 179 MERRIMACK | Avondale SY | 16-7-79 | 17-5-80 | 14-11-81 |
| AO 180 WILLAMETTE | Avondale SY | 4-8-80 | 18-7-81 | 18-12-82 |
| AO 186 PLATTE | Avondale SY | 2-2-81 | 30-1-82 | 16-4-83 |

D: 27,500 tons (fl) S: 20 kts

Dim: 180.29 (167.64 pp) × 25.33 × 10.16 (11.35 prop) A: AO 180, 186: 2/20-mm Mk 15 CIWS (I × 2)



Monongahela (AO 178)

L. & L. Van Ginderen, 7-84



Merrimack (AO 179)

L. & L. Van Ginderen, 3-84



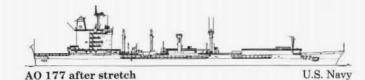
Platte (AO 186) - with 2 Mk 15 CIWS

G. Arra, 1984



AO 177 before stretch

U.S. Navy



Electron Equipt: Radar: 1/LN-66, 1/SPS-55 (AO 180, 186: SPS-10B)

M: 1 set GT; 1 prop; 24,000 hp Electric: 8,250 kw Boilers: 2 Combustion Engineering; 42.25 kg/cm², 454°C Man: 11 officers, 124 men (225 tot. accommodations)

Remarks: Carry 72,000 barrels fuel oil, 48,000 barrels JP-5 gas turbine fuel, and can replenish ships while making 15 knots. Also carry 98 m³ dry stores and 3 refrigerated stores containers. There is a helicopter platform aft. Four constant-tension replenishment stations to port, three to starboard. Able to transfer 408,000 liters of fuel oil and 245,000 liters JP-5 per hour. No additional units planned; subsequent oilers will be under Military Sealift Command control. Although these are high-value targets, no chaff or SLQ-32 systems are installed.

These ships are scheduled to be lengthened; one each year in FY 87-89 and two in FY 90. Subsequent to "jumboizing," they will displace 37,866 tons (fl) on a draft of 10.16 m, and length will be 215.95 m overall. Speed will drop to 19.4 kts. Cargo capacity will be 183,000 barrels fuel oil/JP-5, 401 m³ feedwater, 397 m³ potable water, 205 m³ dry stores, and 8 refrigerated stores containers. Accommodations will be increased to 235, Mk 15 CIWS will be added to AO 177-179; SLQ-32(V)1 and Mk 36 SRBOC EW equipment will be added, as will SLQ-25 Nixie towed torpedo decoys. A new-design propeller and rudder will be fitted, and underway transfer capability will be enhanced.

3 Ashtabula-class oilers (SCB 244 jumbo type)—1 in reserve* Bldr: Bethlehem Steel, Sparrows Point, Md.

| | L | In serv. |
|----------------------|---------|----------|
| AO 51 ASHTABULA* | 22-5-43 | 7-8-43 |
| AO 98 CALOOSAHATCHEE | 6-7-45 | 3-12-45 |
| AO 99 Canisteo | 2-6-45 | 10-10-45 |
| | | |



Canisteo (AO 99)

L. & L. Van Ginderen, 8-84



Caloosahatchee (AO 98) - in light condition

W. Donko, 7-85

D: 36,500 tons (fl) S: 18 kts Dim: 196.3 × 22.9 × 9.6

A: 2/76.2-mm Mk 26 DP (I × 2)

Electron Equipt: Radar: 1/Raytheon 1650/6x, 1/SPS-10

M: 1 set GT; 2 props; 13,500 hp Range: 16,000/11 Boilers: 4 Foster-Wheeler "K"; 31.7 kg/cm², 399°C Man: 20 officers, 350 men

REMARKS: Lengthened 27 m by insertion of new mid-body during 1960s. Two 76.2-mm removed, 1977-78, along with one Mk 52 and two Mk 51 GFCS. Carry 143,000 barrels of fuel, 175 tons of ammunition, and 100 tons of provisions. No helicopter deck. Last World War II-built oilers in regular naval service; both in Atlantic. AO 51 decommissioned 30-9-82 to National Defense Reserve Fleet.

0 (+0+4) new-construction fast combat support ships

| | Bldr | Laid down | L | In serv. |
|--------------|------|-----------|-------|----------|
| AOE 6 SUPPLY | | | | 2.53 |
| AOE 7 N | | 2 2 2 | 2.2.2 | |
| AOE 8 N | | | | |
| AOE 9 N | | 454.4 | | |

Programmed AOE 6 in FY 87, AOE 7 in FY 89, AOE 8 in FY 90, AOE 9 in FY 91



AOE 6 - artist's concept

T. Freeman/U.S. Navy, 1985

D: 48,500 tons (fl) S: 26 kts Dim: 230.1 × 32.6 × 11.89

A: 1/Mk 29 launcher (XVI × 1, Sea Sparrow and RAM missiles) -2/20-mm Mk 15 CIWS (I × 2) -2/25-mm Mk 88 AA (I × 2) -3 helicopters

Electron Equipt: Radar: 1/SPS-64(V)9, 1/SPS-67, 1/Mk 23 TAS, 1/Mk 91 f.c.s. (2 directors)

EW: SLQ-32(V)3, Mk 36 SRBOC chaff RL (VI × 4) TACAN: URN-25

M: 4 G.E.LM-2500 gas turbines; 2 props; 100,000 hp

Electric: . . . Man: 35 officers, 625 men (accommodations)

REMARKS: Modified version of the AOE 1 class with better protective systems. Cargo: 156,000 bbl liquid, plus 2,450 tons dry stores.

◆ 4 Sacramento-class fast combat support ships (SCB 196 type)

| | Bldr | Laid down | L | In serv. |
|------------------|-----------------|-----------|---------|----------|
| AOE 1 SACRAMENTO | Puget Sound NSY | 30-6-61 | 14-9-63 | 14-3-64 |
| AOE 2 CAMDEN | New York SB | 17-2-64 | 29-5-65 | 1-4-67 |
| AOE 3 SEATTLE | Puget Sound NSY | 1-10-65 | 2-3-68 | 5-4-69 |
| AOE 4 DETROIT | Puget Sound NSY | 29-11-66 | 21-6-69 | 28-3-70 |

Authorized: 1 in FY 61, 1 in FY 63, 1 in FY 65, 1 in FY 66



Camden (AOE 2) - Mk 15 CIWS aft

USS Ranger, 10-83



Seattle (AOE 3) - with Mk 23 TAS on foremast, SLQ-32 EW

G. Gyssels, 6-84

D: 18,700 tons light (53,600 fl) S: 26 kts Dim: 241.4 (215.8 pp) × 32.9 × 11.6 A: 1/Mk 29 launcher for Sea Sparrow (VIII × 1) - 2/20-mm Mk 15 CIWS (I × 2) -2/UH-46 helicopters

Electron Equipt: Radar: 1/SPS-53, 1/SPS-10 (AOE 1 and 2: 1/SPS-40 also),

1/Mk 91 Mod. 1, AOE 3: Mk 23 TAS EW: AOE 1, 2, 4: WLR-1, WLR-3; AOE 3: SLQ-32(V)3, Mk 36 SRBOC chaff RL (III × 4)

TACAN: URN-20 (AOE 3, 4: URN-25)

M: G.E. GT; 2 props; 100,000 hp

Boilers: 4 Combustion Engineering, 42.2 kg/cm², 480°C

Range: 10,000/17 Man: 33 officers, 567 men

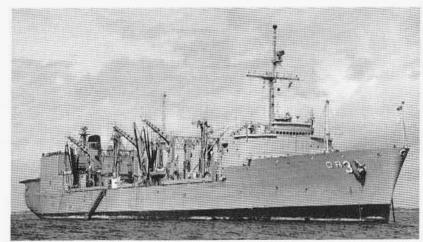
Remarks: Sea Sparrow launcher and Mk 91 Mod. 1 control system with two directors replaced two twin 76.2-mm DP forward; two Mk 56 GFCS removed. The two remaining 76.2-mm gunmounts aft replaced by two 20-mm Mk 15 CIWS Vulcan/Phalanx. The SLQ-32(V)3 ECM will replace WLR-1, and Mk 36 SRBOC chaff rocket system is being added. AOE 3 was the first to get the Mk 23 TAS Mod. 2 (Target Acquisition System), which in these ships will be a stand-alone system employing the UYA-4 computer. Carry 177,000 barrels fuel plus 2,150 tons ammunition, 750 tons provisions. Helicopter hangar and flight deck for 2-3 UH-46 Sea Knight vertical-replenishment helicopters. Turbines in AOE 1 and AOE 2 are from battleship Kentucky (BB 66). AOE 1, 2 in Pacific; other pair in Atlantic. A fifth unit was canceled. AOR 2 is testing the "standard Navy UNREP" suite, with new winches, rams, ram-tensioners and control booths.

7 Wichita-class replenishment oilers (SCB 707 type) Bldr: General Dynamics, Quincy, Mass.

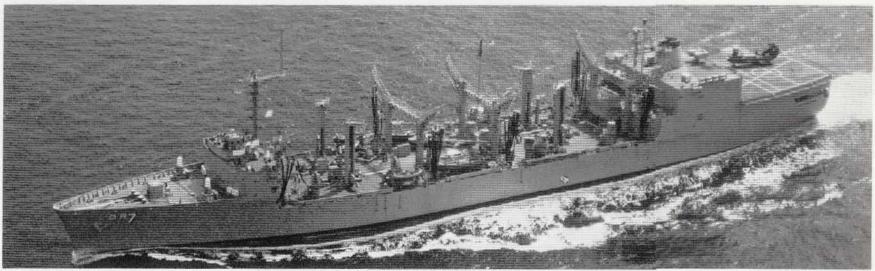
| | Laid down | L | In serv. |
|-------------------|-----------|----------|----------|
| AOR 1 WICHITA | 18-6-66 | 18-3-68 | 7-6-69 |
| AOR 2 MILWAUKEE | 29-11-66 | 17-1-69 | 1-11-69 |
| AOR 3 Kansas City | 20-4-68 | 28-6-69 | 6-6-70 |
| AOR 4 SAVANNAH | 22-1-69 | 25-4-70 | 5-12-70 |
| AOR 5 WABASH | 21-1-70 | 6-2-71 | 20-11-71 |
| AOR 6 KALAMAZOO | 28-10-70 | 11-11-72 | 11-8-73 |
| AOR 7 ROANOKE | 19-1-74 | 7-12-74 | 30-10-76 |

Authorized: 2 in FY 66, 2 in FY 67, 2 in FY 68, 1 in FY 73

D: 12,500 tons light (41,350 fl) S: 20 kts Dim: 200.9 × 29.3 × 10.1 A: AOR 1: unarmed - AOR 2: 4/20-mm AA (I × 4) - AOR 3: 1/Mk 29 launcher (VIII × 1, Sea Sparrow missiles) - AOR 4-7: 1/Mk 29 launcher (VIII×1)-2/Mk 15 CIWS gatling AA (I×2)

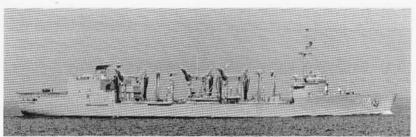


Kansas City (AOR 3) - Sea Sparrow, but no CIWS LSPH E. Pitman, R.A.N., 9-85



Roanoke (AOR 7) - Sea Sparrow launcher abaft stack, missile directors atop lattice towers, UH-46 helicopter

VF-111, U.S. Navy, 8-84



Savannah (AOR 4) - with Mk 15 CIWS and SLQ-32 EW gear

G. Arra, 1984

Electron Equipt: Radar: 1/LN-66 or SPS-53, 1/SPS-10, Sea Sparrow ships: 2/Mk 91 Mod. 1 (2 directors)

EW: Mk 36 SRBOC chaff RL (VI × 4) — AOR 4 also: SLQ-32(V)3

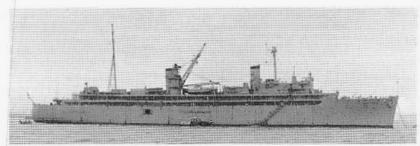
TACAN: URN-25 (AOR 2, 3, 7: SRN-15) M: G.E. GT; 2 props; 32,000 shp

Boilers: 3 Foster-Wheler; 43.3 kg/cm², 454 °C Electric: 8,000 kw Range: 6,500/20; 10,000/17 Man: 20 officers, 363-420 men

Remarks: Carry 175,000 barrels fuel (90,000 distillate fuel), 600 tons ammunition, 575 tons provisions. All except AOR 7 originally had no hangars flanking stack and had 4/76.2-mm DP. Several carried interim armaments of 2 or 4 single 20-mm AA after hangars were added. SLQ-32(V)3 will be added. As with AOE 1 class, they are eventually to get the Mk 23 Mod. 2 TAS (Target Acquisition System) radar with associated UYA-4 computerized data system. The two Mk 76 radar directors for the Mk 91 Mod. 1 missile fire-control system are mounted atop tall lattice towers just forward of the stack. There are four stations for liquid transfer and two for solid transfer to port, three liquid and two solid to starboard; all have constant-tension devices. AOR 2 used in minelaying trials 1983, using Mk 55 mines and portable rails.

♦ 4 Vulcan-class repair ships

| | Bldr | Laid down | L | In serv. |
|-------------|---------------------|-----------|----------|----------|
| AR 5 VULCAN | New York SB | 26-12-39 | 14-12-40 | 16-6-41 |
| AR 6 AJAX | Los Angeles SB & DD | 7-5-41 | 22-8-42 | 30-10-42 |
| AR 7 HECTOR | Los Angeles SB & DD | 28-7-41 | 11-11-42 | 7-2-44 |
| AR 8 Jason | Los Angeles SB & DD | 9-3-42 | 3-4-43 | 19-6-44 |



Hector (AR 7)

G. Arra, 1984

D: 9,325 tons (16,245 fl) S: 19.2 kts Dim: 161.37 (158.5 pp) × 22.35 × 7.11 A: 4/20-mm AA (I × 4) Electron Equipt: Radar: 1/CRP 1500, 1/SPS-10 M: 2 sets GT; 2 props; 11,535 hp Electric: 4,500 kw Boilers: 4 Babcock & Wilcox; 28.2 kg/cm², 382°C

Fuel: 3,800 tons Range: 18,000/12 Man: 41 officers, 979 men

Remarks: Very elaborately equipped repair facilities. Four 127-mm DP (I × 4) removed from all. Jason, typed ARH 1 (heavy hull-repair ship), was redesignated as AR 8 in 1957. AR 8 badly damaged in collision with AO 186, 2-86.

• 1 Achelous-class small repair ship

Bldr: Bethlehem Steel, Hingham, Mass.

ARL 24 SPHINX (ex-LST 963)

Laid down 20-10-44 L In serv. 18-11-44 12-12-44

Recomm. 26-7-85



Sphinx (ARL 24)

U.S. Navy, 7-85

D: 3,960 tons (fl) S: 11.6 kts Dim: 99.98 (96.32 wl) × 15.24 × 3.71

A: 8/40-mm Mk 2 AA (IV × 2) — 4/Stinger SAM launch positions — 6/12.7-mm mg (I × 6)

Electron Equipt: Radar: 1/SPS-10 — TACAN: URN-25 EW: Intercept and D/F arrays

M: 2 G.M. 12-278A diesels; 2 props; 1,800 hp Electric: 520 kw

Fuel: 620 tons Man: . . .

Remarks: Recommissioned after extensive alterations that took over three times the period required to build her during World War II. Equipped for duties off Central America, with new communications and intercept arrays, helicopter deck amidships. Has two obsolete Mk 51 Mod. 2 lead-computing optical directors for the antiquated 40-mm gunmounts. Retains a 25-ton boom forward and carries two LCVP in Welin davits abreast enlarged after superstructure. Sister Indra (ARL 37, ex-LST 1147) was stricken 1-12-77 but has since been retained at Norfolk as an accommodations hulk.

2 (+2) ARS 50-class salvage ships Bldr: P Wisc.

Bldr: Peterson Bldrs., Sturgeon Bay,

In serv. Laid down ARS 50 SAFEGUARD 8-11-82 12-11-83 17-8-85 14-12-85 ARS 51 GRASP 2-5-83 23-4-84 ARS 52 SALVOR 28-7-84 6-86 16-9-83 ARS 53 GRAPPLE 25-4-84 8-12-84 8-86

Authorized: 1 in FY 81, 2 in FY 82, 1 in FY 83

D: 2,300 tons light (2,880 fl) S: 13.5 kts Dim: 77.72 (73.15 wl) × 15.54 × 4.72

A: 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 1/SPS-55

M: 4 Caterpillar diesels, geared drive; 2 CP Kort-nozzle props; 4,200 hp Electric: 2,250 kw Range: 8,000/12 Man: 6 officers, 97 men



Safeguard (ARS 50) - on trials

U.S. Navy, 5-85



Grasp (ARS 51) - on trials

U.S. Navy, 8-85



Grasp (ARS 51) - on trials

U.S. Navy, 8-85

Remarks: First unit ordered 1981, with option for four more from same shipyard; fifth ship deleted from program by Congress, but may be built under FY 91. Design developed from ARS 38. Have 54-ton open-ocean bollard pull and, using beach extraction gear, are able to exert 360-ton pull. Have 500-hp bow-thruster. 30-ton boom aft, 5-ton forward. Able to dead-lift 150 tons over bow or stern. Cargo hold 596 m3. Able to support hard-hat divers to 58-m and SCUBA divers; decompression chamber fitted. Up to 25 percent of crew may be women; 12 extra berths to be fitted. Three foam firefighting monitors. Program far behind schedule.

♦ 7 Diver*- and Bolster-class salvage ships Calif.

| piar: | Dasait | ROCK | CO., | Napa |
|-------|--------|------|------|------|
| | | | | |

| | Laid down | L | In serv. | To reserve |
|------------------|-----------|----------|----------|------------|
| ARS 8 PRESERVER* | 26-10-42 | 1-4-43 | 11-1-44 | 30-9-86 |
| ARS 38 BOLSTER | 20-7-44 | 23-12-44 | 1-5-45 | active |
| ARS 39 Conserver | 10-8-44 | 27-1-45 | 9-6-45 | 30-9-86 |
| ARS 40 Hoist | 13-9-44 | 31-3-45 | 21-7-45 | |
| ARS 41 OPPORTUNE | 13-9-44 | 31-3-45 | 5-10-45 | |
| ARS 42 RECLAIMER | 11-11-44 | 25-6-45 | 20-12-45 | |
| ARS 43 RECOVERY | 6-1-45 | 4-8-45 | 15-5-46 | |



Opportune (ARS 41) - 2 OE-82 SATCOMM antennas above pilothouse G. Gyssels, 9-83

D: 1,530 tons (1,970 fl), ARS 38 to ARS 43: 2,045 (fl) S: 14.8 kts

Dim: 65.1 × 12.5 (ARS 38 to ARS 43: 13.4) × 4.0

A: 2/20-mm AA $(I \times 2) - 2/12.7$ -mm mg $(I \times 2)$

Electron Equipt: Radar: 1/SPS-53 (ARS 40, 41, 43: SPS-10), ARS-43: 1/Raytheon 3400 also

M: 4 Cooper-Bessemer GSB-8 or Caterpillar D399 diesels, electric drive; 2 props; 3,060 hp (2,440 sust.)

Electric: 460 kw Fuel: 300 tons Range: 9,000/14; 20,000/7 Man: 6 officers, 77 men (ARS 38-43: 7 officers, 98 men)

Remarks: Equipped for diver support, salvage, and towing. ARS 38, ARS 39, and ARS 42 re-engined with Caterpillar diesels. ARS 8 transferred to Naval Reserve Force 1-11-79 and ARS 38 on 30-6-83. Escape (ARS 6) reactivated from Maritime Administration reserve and transferred to Coast Guard 4-12-80. Clamp (ARS 33) stricken 1963 to MARAD reserve fleet; reacquired 1973, but not reactivated and again stricken. Curb (ARS 21 and Gear (ARS 34) stricken and sold 30-4-81. All except ARS 38 and ARS 43 are to be decommissioned on completion of the ARS 50 class.

• 5 L. Y. Spear-class submarine tenders (SCB 702 and 737 types)

| | Bldr | Laid down | L | In serv. |
|---------------------|-----------------------|-----------|---------|----------|
| AS 36 L. Y. SPEAR | Gen. Dynamics, Quincy | 5-5-66 | 7-9-67 | 28-2-70 |
| AS 37 DIXON | Gen. Dynamics, Quincy | 7-9-67 | 20-6-70 | 7-8-71 |
| AS 39 EMORY S. LAND | Lockheed SB, Seattle | 2-3-76 | 4-5-77 | 7-7-79 |
| AS 40 FRANK CABLE | Lockheed SB, Seattle | 2-3-76 | 14-1-78 | 5-2-80 |
| AS 41 McKee | Lockheed SB, Seattle | 14-1-78 | 16-2-80 | 15-8-81 |

Authorized: 1 in FY 65, 1 in FY 66, 1 in FY 72, 1 in FY 73, 1 in FY 77

D: AS 36, 37: 12,770 tons light (23,493 fl); AS 39-41: 711 tons light (22,560 fl) S: 20 kts (18 sust.) Dim: 196.29 × 25.91 × 7.77 A: 4/20-mm AA (I × 4) Electron Equipt: Radar: 1/. . . nav., 1/SPS-10

M: 1 set de Laval GT; 1 prop; 20,000 hp Electric: 11,000 kw

Boilers: 2 Combustion Engineering; 43.6 kg/cm², 462°C

Man: AS 36 and AS 37: 51 officers, 1,029 men

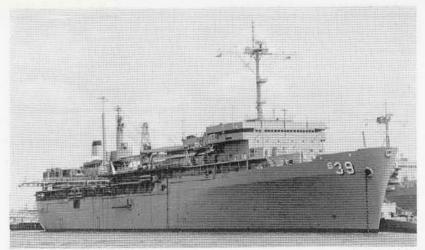
AS 29 to AS 41: 50 officers, 1,108 men + flag staff: 75 officers, 44 men

REMARKS: Provide support to up to 12 submarines with up to 4 alonside at once. AS 39 to AS 41 having been specifically tailored to the needs of the Los Angeles class. One 30-ton crane and two 5-ton traveling cranes. Have a total of 53 specialized repair shops. Medical facilities include operating room, 23-bed ward, and dental clinic. AS 39 and later also carry 2/40-mm Mk 19 grenade launchers. Helicopter deck, but no



McKee (AS 41)

U.S. Navy, 1981



Emory S. Land (AS 39)

G. Arra, 1984

hangar. AS 37 equipped to support Tomahawk cruise missiles. AS 36 and AS 37 have General Electric turbines and Foster-Wheeler boilers. No longer planned to fit Vulcan/Phalanx or Sea Sparrow in later ships. Two 127-mm DP (I \times 2) removed from AS 36 and AS 37. AS 38 (FY 69) canceled 27-3-69. No other submarine tenders currently programmed.

• 2 Simon Lake-class submarine tenders (SCB 238 type)

| | Bldr | Laid down | L | In serv. |
|------------------|---------------------|-----------|---------|----------|
| AS 33 SIMON LAKE | Puget Sount NSY | 7-1-63 | 8-2-64 | 7-11-64 |
| AS 34 CANOPUS | Ingalls, Pascagoula | 2-3-64 | 12-2-65 | 4-11-65 |

Authorized: 1 in FY 63, 1 in FY 64



Simon Lake (AS 33)

G. Arra, 8-85

D: 12,000 tons [AS 33: 19,934 (fl), AS 34: 21,089 (fl)] S: 18 kts

Dim: $196.2 \times 25.9 \times 8.7$ A: 4/76.2-mm DP (II \times 2)

Electron Equipt: Radar: 1/SPS-10 M: de Laval GT; 1 prop; 20,000 hp

Electric: 11,000 kw Boilers: 2 Combustion Engineering; 43.6 kg/cm², 462°C

Man: 60 officers, 1,206 men

REMARKS: Specifically equipped to support nuclear-powered, ballistic-missile submarines, with 16 missiles stowed vertically amidships. Converted to carry Poseidon missiles, 1969-71. Both are to serve Trident-equipped SSBNs; AS 33 converted under FY 78, and AS 34 converted 1984-85 and has been given new cranes. Sister AS 35 canceled on 3-12-64. Two 30-ton cranes and four 5-ton traveling cranes. Helicopter deck aft, but no hangar. Two Mk 63 fire-control systems for guns removed.

• 2 Hunley-class submarine tenders (SCB 194 type)

| | Bldr | Laid down | L | In serv. |
|---------------|---------------------|-----------|---------|----------|
| AS 31 HUNLEY | Newport News SB | 28-11-60 | 28-9-61 | 16-6-62 |
| AS 32 HOLLAND | Ingalls, Pascagoula | 5-3-62 | 19-1-63 | 7-9-63 |

Authorized: 1 in FY 60, 1 in FY 62



Hunley (AS 31)

L. & L. Van Ginderen, 5-82

D: 11,000 tons light (19,819 fl) S: 19 kts Dim: $182.6 \times 25.3 \times 7.4$ A: 4/20-mm AA (I \times 4) Electron Equipt: Radar: 1/LN-66, 1/SPS-10 M: 10 Fairbanks-Morse 38D½ diesels, electric drive; 1 prop; 15,000 hp Electric: 12,000 kw Man: 60 officers, 1,206 men

Remarks: Intended to support SSBNs; converted to carry Poseidon missiles, 1973-75.

Air-conditioned. Helicopter platform. Original 32.5-ton rotating hammerhead gantry crane removed around 1970 and replaced by two 30-ton cranes.

1 Proteus-class submarine tender (SCB 190 conversion type)
 Bldr: Moore SB & DD, Oakland, Cal.

Laid down L In serv. Conv. AS 19 Proteus 15-9-41 12-11-42 31-1-44 8-7-60



Proteus (AS 19)

LSPH E. Pitman, R.A.N., 9-84

D: 14,195 tons (20,295 fl) S: 15.4 kts Dim: 175.1 (171.9 wl) × 27.3 × 8.4 A: 4/20-mm AA (I × 4) Electron Equipt: Radar: 1/LN-66, 1/SPS-10 M: 8 G.M. 16-248 diesels, electric drive; 2 props, 11,520 hp Electric: 5,000 kw Range: 26,000/10 Man: 57 officers, 1,119 men

Remarks: Lengthened 13.4 m, 1959-60, as the first SSBN tender, carrying Polaris missiles in the new section, handled by an extendable gantry crane. Superstructure enlarged over that of former sisters in the Fulton class. Served the George Washington and Ethan Allen class SSBNs in the Pacific: often stationed at Diego Garcia since 1981 as a general-purpose tender.

♦ 3 Fulton-class submarine tenders—1 in reserve*

| | Bldr | Laid down | L | In serv. |
|---------------|-------------------|-----------|----------|----------|
| AS 11 FULTON | Mare Island NSY | 19-7-39 | 27-12-40 | 12-9-41 |
| AS 12 Sperry* | Mare Island NSY | 1-2-41 | 17-12-41 | 1-5-42 |
| AS 18 ORION | Moore SB, Oakland | 31-7-41 | 14-10-42 | 30-9-43 |



Orion (AS 18) - with new cranes

C. Martinelli, 10-84

D: 9,734 tons (12,215 fl) S: 15.4 kts Dim: 161.4 × 22.3 × 7.8 A: 4/20-mm AA (I × 4) Electron Equipt: Radar: 1/LN-66, 1/SPS-10 M: 8 G.M. 16-248 diesels, electric drive; 2 props; 11,200 hp Electric: 2,300 kw Fuel: 3,760 tons Range: 32,000/15 Man: 57 officers, 1,217 men

Remarks: All received FRAM-II modernization and can support nuclear submarines. Foundry can cast pieces up to 250 kg. Two 20-ton rotating cranes are fitted. AS 12 decommissioned to reserve 30-9-82. Sisters Bushnell (AS 15) stricken 15-11-80 and sunk 3-6-83 as a torpedo target; Howard W. Gilmore (AS 16) decommissioned 30-9-80 and struck 1-12-80; Nereus (AS 17), long in reserve, was stricken by 30-9-82.

2 Pigeon-class submarine-rescue ships (SCB 721 type)
 Bldr: Alabama
 Bldr: Alabama

| | Laid down | L | In serv |
|----------------|-----------|---------|---------|
| ASR 21 PIGEON | 17-7-68 | 13-8-69 | 28-4-73 |
| ASR 22 ORTOLAN | 22-8-68 | 10-9-69 | 14-7-73 |

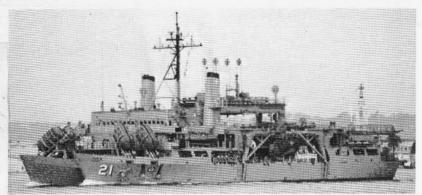
Authorized: 1 in FY 67, 1 in FY 68

D: 3,411 tons (4,570 fl) **S**: 15 kts **Dim**: $76.5 \times 26.2 \times 6.5$

A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/SPS-53, 1/. . . nav.

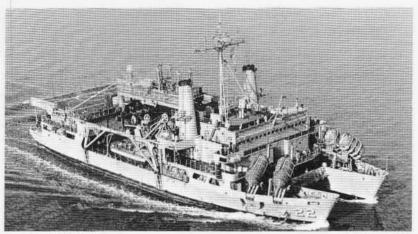
M: 4 Alco high-speed diesels; 2 props; 6,000 hp Range: 8,500/13 Man: 10 officers, 89 men + DSRV crew: 4 officers, 20 men

Remarks: The catamaran hulls (7.92-m beam) are separated by 10.36 m. Diving bells and other salvage equipment are lowered between the two hulls by a moving crane. The ships can carry two small DSRV (Deep Submergence Rescue Vehicle) subma-



Pigeon (ASR 21)

L. & L. Van Ginderen, 10-84



Ortolan (ASR 22)

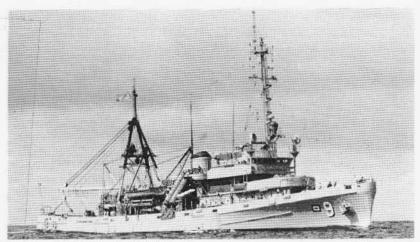
G. Arra, 1984

rines, but the only two DSRV built are land-stored in fly-away status. Excellent lowering and handling equipment for up to 60 tons; divers to 260 m. Carry Mk 2 Mod. 1 saturation diving gear. Helicopter platform aft spans both hulls. Not considered to be successful ships, being overly complex and difficult to maneuver. ASR 21 has an LN-66 navigational radar, ASR 22 a Raytheon set.

4 Chanticleer-class submarine-rescue ships Foundry (ASR 9: Moore SB & DD, Oakland)

Bldr: Savannah Machine

| | Laid down | L | In serv. |
|------------------|-----------|---------|----------|
| ASR 9 FLORIKAN | 30-9-41 | 14-6-42 | 5-4-43 |
| ASR 13 KITTIWAKE | 5-1-45 | 10-7-45 | 18-7-46 |
| ASR 14 Petrel | 26-2-45 | 29-9-45 | 24-9-46 |
| ASR 15 SUNBIRD | 2-4-45 | 3-4-46 | 28-1-47 |



Florikan (ASR 9) - SATCOMM antennas flanking foremast

G. Arra, 5-85

D: 1,670 tons (2,015 fl) S: 14.9 kts Dim: 76.7 × 13.4 × 4.9 A: 2/20-mm AA (I×2) Electron Equipt: Radar: 1/SPS-53 M: 4 G.M. 12-278A diesels, electric drive; 1 prop; 3,000 hp Electric: 460 kw Man: 10 officers, 89 men

Remarks: Carry a McCann rescue bell aft. All equipped for helium/oxygen diving. ASR 9 has Alco Model 539 diesels. All have sonar and underwater communications equipment. No plans to replace these elderly units before mid-1990s.

♦ 5 Abnaki and Achomawi*-class fleet ocean tugs -- all in reserve

| | Bldr | L | In serv. | To reserve |
|-----------------|----------------------|---------|----------|------------|
| ATF 105 MOCTABI | Charleston SB & DD | 25-3-44 | 25-7-44 | 30-9-85 |
| ATF 110 QUAPAW | United Eng., Alameda | 15-5-43 | 6-5-44 | 30-8-85 |
| ATF 113 TAKELMA | United Eng., Alameda | 18-9-43 | 3-8-44 | 30-9-83 |
| ATF 159 PAIUTE* | Charleston SB & DD | 4-6-45 | 27-8-45 | 23-8-85 |
| ATF 160 Papago* | Charleston SB & DD | 21-6-45 | 3-10-45 | 28-6-85 |



Takelma (ATF 113)

USS Ranger, 9-83

D: 1,235 tons (1,640 fl) S: 16.2 kts Dim: 62.48 (59.44 pp) × 11.73 × 4.67 A: None M: 4 Caterpillar D399 diesels, electric drive; 1 prop; 3,000 hp Electric: 400 kw Range: 6,500/16; 15,000/8 Man: 5 officers, 60 men + Reserves: 3 officers, 25 men

Remarks: All now in National Defense Reserve Fleet, on Navy List. Developed from pre-World War II Apache class. ATF 105, ATF 110, and ATF 113 originally had four Busch-Sulzer BS-539 diesels and a small-diameter funnel; the others had G.M. 12-278A diesels and a large funnel. Have a 150-ton pull capability to salvage beached vessels, carry 640-m 53-mm steel towing cable, plus 730-m nylon towing line. Five sisters serve in the U.S. Coast Guard, and the class can be found in many of the world's navies.

Ten sisters in the National Defense Reserve Fleet are to be discarded or otherwise used: of the *Cherokee* class, *Seneca* (ATF 91) is to become an immobile engineering trials craft at Annapolis, while *Chippewa* (ATF 69), *Hopi* (ATF 71), *Moreno* (ATF 87), *Narragansett* (ATF 88), and *Wenatchee* (ATF 118) are to be discarded, as are *Atakapa* (ATF 149), *Mosopelea* (ATF 158), and *Achomawi* (ATF 148) of the *Achomawi* class. *Tenino* (ATF 115) is in use as a salvage training hulk.

Note: The three serving units of the Sotoyomo-class auxiliary ocean tugs in the National Defense Reserve Fleet, Accokeek (ATA 181), Navigator (ATA 203), and Keywadin (ATA 213) are to be used as salvage training hulks.

3 Edenton-class salvage and rescue ships oft, U.K. Bldr: Brooke Marine, Lowest-

Authorized: 1 in FY 66; 2 in FY 67

| | Laid down | L | In serv. |
|-----------------|-----------|----------|----------|
| ATS 1 EDENTON | 1-4-67 | 15-5-68 | 23-1-71 |
| ATS 2 BEAUFORT | 19-2-68 | 20-12-68 | 22-1-72 |
| ATS 3 Brunswick | 5-6-68 | 14-11-69 | 19-12-72 |



Edenton (ATS 1)

L. & L. Van Ginderen, 6-85

D: 2,650 tons (3,200 fl)
 S: 16 kts
 Dim: 88.0 (80.5 pp) × 1.53 × 4.6
 A: 2/20-mm AA (I × 2)
 Electron Equipt: Radar: 1/SPS-53, 1/Raytheon . . . nav.

M: 4 Paxman 12 YLCM (900 rpm) diesels; 2 Escher-Wyss CP props; 6,000 hp Electric: 1,200 kw Range: 10,000/13 Man: 7 officers, 106 men

REMARKS: ATS 4 (FY 72) and ATS 5 (FY 73) canceled in favor of Powhatan class T-ATF. Can tow ships up to AOE 1-class size. 272-ton dead lift over the bow. 20-ton crane aft; 10-ton boom forward. Can conduct dives to 260 m. Powerful pumps and complete fire-fighting equipment. Equipped with bow-thruster.

1 Currituck-class guided-missile ship

Bldr: Los Angeles SB & DD Co., San

AVM 1 NORTON SOUND (ex-AV 11)

Laid down 7-9-42

In serv. 28-11-43 8-1-45



Norton Sound (AVM 1) - showing SPY-1 Aegis radar installation G. Arra, 7-79

D: 10,310 tons light (13,590 fl) S: 19 kts Dim: 164.72 (158.5 wl) × 21.11 × 7.16

A: 1/Mk 26 Mod. 0 launcher (II × 1, 24 Standard SM-1/2 MR missiles) -16/EX-41 VLS cells (see remarks)

Electron Equipt: Radar: 1/SPS-53, 1/SPS-10, 1/SPS-40, 1/SPY-1A, 1/SPG-62 TACAN: SRN-6

M: 2 sets Allis-Chalmers GT; 2 props; 12,000 hp Electric: 5,625 kw Boilers: 4 Babcock & Wilcox Express; 28.2 kg/cm², 366°C

Fuel: 2,300 tons Man: 35 officers, 460 men

Remarks: Ex-seaplane tender. Has served as a guided-missile trials ship since 1948. The prototype Aegis system was installed in 1975, with only forward, starboard "face" of the SPY-1A phased-array radar operational. SPS-40 replaced the unique, large-antenna SPS-52 variant radar in 1975. Helicopter landing pad between Mk 26 launcher and hangar. Refitted by Ingalls, Pascagoula, 1981, with 16-cell Martin-Marietta EX-41 VLS (Vertical Launching System) recessed into forecastle. Three of the cells are required for a telescoping replenishment-at-sea boom, leaving 13 cells for Standard, Harpoon, and Tomahawk missiles. Firing trials began 12-81. A new, longer, production version of the EX-41 (Mk 41 Mod. 1) was installed during 1983.

♦ 1 Intrepid-class auxiliary-training aircraft carrier

Bldr Laid down L In serv. AVT 16 LEXINGTON Bethlehem, Quincy 16-7-41 25-9-42 17 - 2 - 43



Lexington (AVT 16) - arriving at Philadelphia for overhaul

G. Arra, 10-84

D: Approx. 33,000 tons (42,550 fl) **S:** 30 + kts **Dim:** 270.97 (249.94 wl) \times 31.39 (58.5 flight deck) \times 9.4

A: Removed (no aircraft permanently assigned)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-12, 1/SPN-35, 1/SPN-43 TACAN: URN-20

M: 4 sets Westinghouse GT; 4 props; 150,000 hp Boilers: 8 Babcock & Wilcox; 41.7 kg/cm², 454°C Electric: 7,000 kw Fuel: 6,750 tons Range: 18,000/12 Man: 75 officers, 1,365 men

Remarks: Employed in deck-landing training at Pensacola, Fla. Was to have been stricken in FY 80 and replaced by the Coral Sea (CV 43), but has been extended in service through FY 90. On 29-12-68 her number changed from CVS 16 to CVT 16; changed to AVT 16 on 15-7-78. Has two Type C11 Mod. 1 steam catapults, three elevators (one centerline forward; one at the forward end of the angled deck; and one to starboard, abaft the island), and four Mk 7 arrester wires. Flight deck composed of 76-mm-thick Douglas fir planking. All guns and fire-control equipment removed. Completed major overhaul 5-80; received a 12-month overhaul beginning 10-84.

UNCLASSIFIED MISCELLANEOUS SHIPS

• 1 Trident missile-firing simulator barge

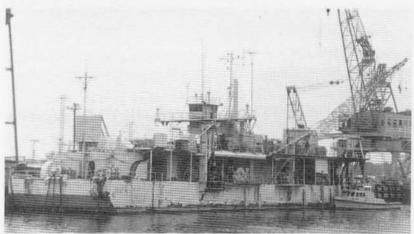
IX 512 (ex-U.S. Army BD 6651) -- acquired 1-9-83

Remarks: Works with YD 244. No characteristics available.

Note: IX 511 (ex-LST 399) was stricken 15-6-85 for use as a target.

Bldr: Norfolk NSY (In serv. 1942) 1 explosives damage-control barge

IX 509 (ex-Underwater Test Barge No. 1, ex-YC. . .)



IX 509

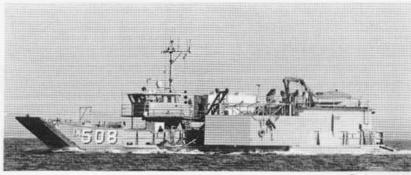
W. Donko, 7-84

D: 3,000 tons (fl) Dim: 56.1 × . . . × 3.7

REMARKS: Operated for the Naval Ships Research and Development Center. Reclassified IX 509 on 1-12-79. Has a 60-ton crane.

1 satellite navigation systems trials craft

IX 508 (ex-LCU 1618) Bldr: Gunderson Bros., Portland, Ore. (In serv. 1959)



IX 508

G. Arra, 1984

D: 190 tons (390 fl) S: 11 kts Dim: 41.07 × 9.07 × 2.08 M: 4 G.M. 6-71 diesels; 2 Kort-nozzle props; 1,200 hp Fuel: 13 tons Range: 1,200/11 Man: .

Remarks: Adapted 1978 for Naval Ocean Science Center, San Diego, to conduct trials with NAVSTAR global positioning system. Reclassified IX from LCU 1-12-79.

 2 Admiral W.S. Benson-class barracks ships meda, Cal.

Bldr: Bethlehem Steel, Ala-

In serv.

IX 507 GENERAL HUGH J. GAFFEY (ex TAP 121, ex-Admiral W.L. Capps, AP 121)

18-9-44

IX 510 GENERAL WILLIAM O. DARBY (ex-TAP 127, 27-9-45 4-6-45 ex-Admiral W.S. Sims, AP 127)

D: 12,657 tons light (22,574 fl) S: 19 kts

Dim: 185.6 (174.65 pp) × 23.01 × 8.05

M: 2 sets G.E. GT, electric drive; 2 props; 18,000 hp Electric: 2,875 kw Boilers: 4 Combustion Engineering "D," 42.3 kg/cm², 449°C

Fuel: 4,037 tons Man: Berthing for 499 officers, 1,577 men

Remarks: Former troop transport transferred to the Army in 1946, reacquired by the Navy on 1-3-50 for MSC (then MSTS). Stricken on 9-1-69 and transferred to Maritime Commission Reserve Fleet. Partially reactivated and redesignated IX 507 on 1-11-78 for service at Bremerton NSY, Washington, as berthing ship for crew of CVN 65, then undergoing overhaul. IX 510 reclassified 10-81 and towed from James River, Virginia, to Norfolk Naval Shipyard; placed in service 1-7-82. Propulsion plants not reactivated.

UNCLASSIFIED MISCELLANEOUS SHIPS (continued)



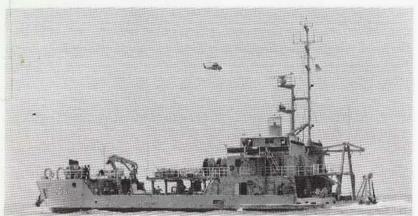
General William O. Darby (IX 510)

W. Donko, 7-83

♦ 1 YFU 71-class trials tender

Bldr: Pacific Coast Eng. Co., Alameda, Cal.

IX 506 (ex-YFU 82) (In serv. 10-68)



IX 506

G. Arra, 5-83

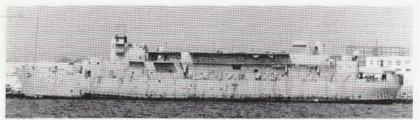
D: 220 tons (380 fl)
 S: 8 kts
 Dim: 38.1 × 10.97 × 2.29
 Electric: 120 kw
 M: 4 G.M. 6-71 diesels; 2 props; 1,000 hp
 Man: 2 officers, 10 men

Remarks: Ex-harbor utility craft. Reclassified on 1-4-78 for service with Naval Ocean Systems Center, San Diego, to replace IX 505 (ex-YTM 759). Former barge YFN 816 is used as a work platform with this unit.

• 3 Benewah-class barracks ships

Bldr: Boston NSY

| | Laid down | L | In serv. |
|---------------------------|-----------|----------|----------|
| IX 502 MERCER (ex-APB 39) | 25-8-44 | 17-11-44 | 19-9-45 |
| IX 503 Nueces (ex-APB 40) | 2-1-45 | 6-5-45 | 30-11-45 |
| IX 504 Echols (ex-APB 37) | 6-45 | 30-7-45 | 1-1-47 |



Mercer (IX 502)

W. Donko, 7-85

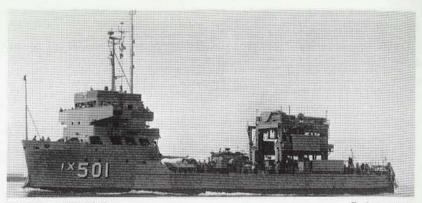
D: 2,189 tons light (3,640 fl) S: 10 kts Dim: 100.0 × 15.2 × 3.4 M: 2 G.M. 12-267 ATL diesels; 2 props; 1,600 hp Electric: 500 kw Man: (when operational): 13 officers, 180 men + 26 officers, 1,200 troops

REMARKS: IX 502 and IX 503 recommissioned 1968 for service in Vietnam, placed back in reserve 1969-71; activated again in 1-11-75 as barracks ships at Puget Sound NSY. IX 504, in reserve since completion in 1947, activated 1-2-76 as a barracks ship for Ohio-class SSBN crews at General Dynamics, Groton. Propulsion plant inactivated. Eight 40-mm AA (IV × 2) removed.

◆ 1 test range support ship (ex-LSMR) Bldr: Brown SB, Houston

Laid down L In serv. IX 501 ELK RIVER (ex-LSMR 501) 24-3-45 21-4-45 27-5-45

D: 1,280 tons (fl) S: 11 kts Dim: 70.0 × 15.2 × 2.8 Electron Equipt: Radar: 1/LN-66 Electric: 440 kw M: 2 G.M. 16-278A diesels; 2 props; 2,880 hp Man: 25 men + 20 technicians



Elk River (IX 501)

G. Arra, 1983

Remarks: Former fire-support rocket ship converted 1967-68 at Avondale Shipyards, Westwego, Louisiana, to act as support ship at the San Clemente Island Range for the Navy deep-submergence diving program. 2.4-m bulges were added to her hull sides and a center well cut for lowering equipment through the hull. The well is straddled by a 65-ton traveling gantry crane. Thrusters added to allow accurate dynamic mooring. Tests diving procedures, equipment, and small diving vehicles.

• 1 sonar test barge

IX 310 (no name)

Remarks: Actually, two barges moored in Lake Seneca, New York; subordinated to the Naval Underwater Sound Laboratory, Newport, Rhode Island. In service in 1971. IX 309, *Monob One*, is now numbered YAG 61.

• 1 U.S. Army FS 381-class torpedo-trials ship

IX 308 New Bedford (ex-AKL 17, ex-FS 289)

Bldr In serv.

Martinolich SB, 3-45

San Diego, Cal.

D: 526 tons light (940 fl) S: 13 kts Dim: 54.10 (50.29 wl) \times 9.75 \times 3.05 A: 1/533-mm TT — 3/324-mm Mk 32 ASW TT (III \times 1)

M: 2 G.M. 6-278A diesels; 2 props; 1,000 hp

Electric: 225 kw Fuel: 67 tons Range: 3,200/11 Man: 24 accomm.

Remarks: Operated by the Coast Guard for the Army during World War II; transferred to the Navy as a cargo ship on 1-3-50. Converted as a torpedo-trials ship in 1963. Operated by the Naval Torpedo Station, Keyport, Washington. Carries the CURV remote-controlled underwater recovery vehicle.

♦ 1 U.S. Army FS 330DC-class torpedo-trials ship

Bldr In serv.
IX 306 (ex-FS 221) Higgins Industries, New Orleans 1-45

D: 460 tons (906 fl) **S:** 12 kts **Dim:** 54.81 × 9.75 × 4.32 **A:** 1/533)mm TT — 3/324-mm Mk 32 ASW TT (III × 1)

M: 2 Enterprise diesels; 2 props; 800 hp Electric: 225 kw Fuel: 62 tons

REMARKS: Employed by the Army as a cargo ship until transferred to the Navy on 1-1-69 as a torpedo- and general-experimentation trials ship for the Naval Underwater Weapons Research and Engineering Center, Newport, R.I., at the Atlantic Underwater Test and Evaluation Center (AUTEC) in the Bahamas. Naval and civilian crew. Painted white with blue bow; torpedo-tube exits on starboard bow.

♦ 1 ocean construction platform

Bldr: Missouri Valley Br. & Iron, Ind.

Laid down L In serv.
SEACON (ex-YFNB 33) 16-1-45 22-3-45 25-10-45

D: 2,780 tons (fl) **S**: 7 kts **Dim**: $79.25 \times 14.63 \times 2.9$

M: 1 G.M. 12-71 diesel, 2 G.M. 6-71 diesels; 3 Voith-Schneider 14E/87 vertical cycloidal props; 1,020 hp

Electric: 575 kw Man: 50 tot.

Remarks: A large covered barge belonging to the Navy and used by NASA for transporting rockets, the *Seacon* was converted 1974-76 by Norfolk SB & Dry Dock Co. to serve as a seagoing work ship for the Navy Ocean Engineering and Construction Project Office. Intended to be towed at up to 11 knots to work locations and then to use own propulsion for precision maneuvering. Can be used to lay cable, can moor in 200-m water, and has open work deck 40×14 aft. Unique in having no ship or yard-craft number.

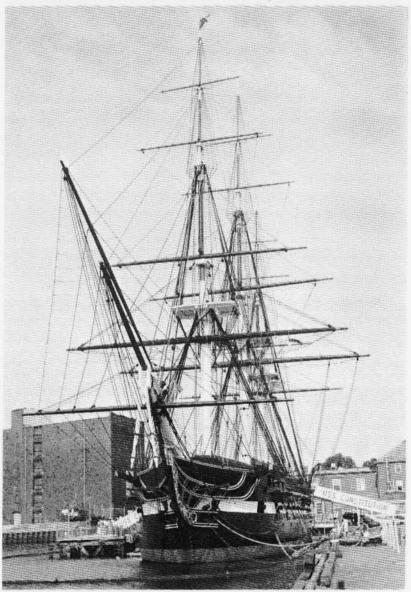
♦ 1 sail frigate relic Bldr: Hart's SY, Boston, Mass.

Constitution (ex-IX 21) (L: 21-10-1797)

D: 2,200 tons S: 13 kts (sail) Dim: 53.4 (hull) \times 13.7 \times 6.1 A: 30/24 pdr. — 16/18-pdr carronade — 10/12-pdr (nominal) Man: 2 officers, 47 men

Remarks: Remains in commission. Wooden construction. First went to sea 22-7-1798. Three masts: 28.7, 31.7, and 24.7 m high. Remains docked at former Boston Navy Yard except for twice-yearly "turnaround" to prevent warpage. Designated IX 21 from 8-12-41 to 1-9-75, and briefly bore name Old Constitution from 1917 to 1925.

UNCLASSIFIED MISCELLANEOUS SHIPS (continued)



Constitution

L. & L. Van Ginderen, 9-83

EXPERIMENTAL CRAFT

♦ 1 BH 110-class Rigid Sidewall Surface Effect Trials craft

SES-200 (ex-USCG Dorado, Bell-Halter, New Orleans 12-78 2-79
WSES 1)



SES-200

Bell-Halter, 9-82

D: 128 tons light (210 fl) S: 28-32 kts Dim: 48.76 × 11.89 × 2.40 at rest/1.70 on cushion Electron Equipt: Radar: 2/Decca navigational

M: 2 G.M. 16V149 TI diesels for propulsion; 2 CP props; 3,200 hp, 2 G.M. 8V92 TI diesels for lift; 2 centrifugal fans; 990 hp

Electric: 60 kw Range: 300-500/35 on cushion; 2,500/23 Man: 2 officers, 18 men, 3 civilian technicians Fuel: 59.6 tons

REMARKS: Designed by Bell Aerospace-Textron and built by Halter Marine in a jointly financed effort. Leased 1-80 for one month by U.S. Coast Guard and then again for a longer trials period in 1981, commencing with a six-month joint USN/USCG opera-

tional evaluation from Key West. In early 1982 the ship came under U.S. Navy control and had accommodations for 14 additional personnel added. Placed in service 24-9-82. Functions by trapping a fan-generated air bubble between the rigid sidewalls and rubber seals at bow and stern. Assigned to David Taylor Naval Ship Research and Development Center. Conducted trials for U.S. Coast Guard late 1984.

 1 space-vehicle booster recovery ship serv. 1966) Bldr: Bishop Marine Service (In

RSB 1 (ex-A.B. Wood II)



RSB 1

U.S. Navy

D: 291 tons (fl) S: 13 kts Dim: 47.85 × 10.97 × 3.35 M: 2 diesels; 2 props; 1,530 hp Man: 5 (civilians)

Remarks: Operated by civilian contractor for Naval Surface Warfare Center, Fort Lauderdale, Fla. Used to recover space-vehicle boosters. Has a bow-thruster and a 35-ton telescoping crane.

1 propulsion trials craft

JUPITER II



Jupiter II

U.S. Navy, 9-80

Remarks: Jupiter II is a 19.8-m workboat operated by the Naval Ships Research and Development Center, Annapolis, Md. On 23-9-80 the gas-turbine-powered craft began trials with a 300-kw superconducting electric propulsion motor, producing 6-7 kt speeds. A 2,250-kw superconducting motor was to be substituted late in 1981.

♦ 1 SWATH (Small Waterplane Area, Twin-Hull) prototype

SSP 1 Kaimalino Bldr: U.S. Coast Guard, Curtis Bay, Md. (L: 7-3-73)



Kaimalino (SSP 1)

U.S. Navy, 1980

D: 228 tons (fl) S: 22 kts Dim: 26.92 × 12.99 × 4.65 Electron Equipt: Radar: 1/LN-66 (SPS-59)

EXPERIMENTAL CRAFT (continued)

M: CODOG 2 G.E. T64-6B gas turbines, chain drive; 2 CP props; 5,000 hp - or: 2 G.M. 6-71 diesels, 2 hydraulic motors; 160 hp

Electric: 78 kw Range: 450/17; 1,500/5 Man: 15 max.

REMARKS: Catamaran hull with cigar-shaped flotation pontoons. Helicopter deck. Operated by the Naval Ocean Systems Center, Hawaii Laboratory. The SWATH concept shows great promise as an economical, high-performance/high endurance ASW ship, but has been hampered in its development by a lack of funding. Kaimalino has been used in torpedo-firing trials and as a weapons-recovery craft. Planned stretch to 600 tons (fl) not carried out, due to costs, although material was assembled 1982 for the conversion.

♦ 2 Asheville-class engineering-trials ships

Bldr: Tacoma Boat

In serv. ATHENA I (ex-Chehalis, PG 94) 11-8-69 ATHENA II (ex-Grand Rapids, PG 98) 9-5-70



Athena I (foreground) and Athena II - yellow hulls, white superstructure David Taylor Model Basin, 1980

D: 225 tons (250 fl) S: 40 kts Dim: 50.14 × 7.28 × 2.9

M: CODOG: 1 G.E. 7LM-1500-PE 102 LM-1500 gas turbine (12,500 hp), 2 Cummins VT12-875M diesels (1,400 hp); 2 CP props

Electric: 200 kw Fuel: 50 tons Range: 325/37; 2,400/14

Remarks: These craft are regarded as equipment, and therefore do not have USN hull numbers. Operate from Panama City, Florida, for the Naval Ships Research and Development Center, Carderock. Have civilian crews and are disarmed. Athena I reclassified on 21-8-75, Athena II on 1-10-77. Have a 10-ton instrumentation payload. Both can carry a 14.9-m², portable, glass-reinforced plastic laboratory on the stern, and Athena I has a permanent 18.6-m2 lab added forward. Douglas (PG 100) was to have been converted to Athena III in FY 83; lack of funds canceled project and ship discarded 12-84.

• 1 hydrofoil research craft Bldr: Boeing/Martinac, Tacoma, Washington

Laid down HIGH POINT (ex-PCH 1) 27-2-61 17-8-62 15-8-63



High Point (PCH 1) - ashore, auxiliary propeller lowered

W. Donko, 7-83

D: 110 tons (fl) S: 48 kts Dim: 35.0 × 9.4 × 1.8 (5.2, foils extended) M: 2 Bristol-Siddeley/Rolls-Royce Proteus gas turbines; 4 props (paired, counter-rotating); 6,200 hp -2 Packard 2D850 diesels; 1 prop; 600 hp for hull-borne drive (12 kts)

Man: 1 officer, 12 men

Remarks: Officially stricken 30-9-79, but retained as "floating equipment" for experimental purposes at Bremerton, Wash. Foils retract vertically: single forward set is steerable, while after pair each have a nacelle with a propeller at each end. A 40-mm AA and 4/324-mm Mk 32 ASW TT (I × 4, fixed) have been removed. Used for high-speed Harpoon SSM launch trials in 1973-74. On loan to Boeing during 1984-85.

1 Cove-class former inshore minesweeper Bldr: Bethlehem SY, Bellingham, Wash.

Laid down In serv. MSI 2 CAPE 1-5-57 5-4-58 27-2-59



Cape (MSI 2)

1959

D: 200 tons (240 fl) S: 12 kts Dim: 34.1 × 7.1 × 3.0 M: 2 G.M. diesels; 2 props; 650 hp Man: . . . (civilians)

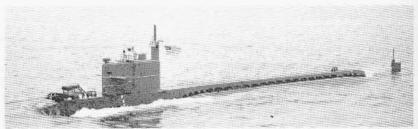
Remarks: Wooden construction; sweep gear removed. MSI 2 has been operated by the Applied Physics Laboratory of Johns Hopkins University since 31-7-70. Sister Cove (MSI 1) is now classed as floating property and operates at San Diego for the Naval Ocean Systems Center. Sisters operate as minesweepers in the Iranian and Turkish

DEEP-SUBMERGENCE RESEARCH CRAFT

1 nuclear research submarine for deep diving

Bldr Laid down In serv. Electric Boat Co. 10-6-67 25-1-69 27-10-69 NR-1

Authorized: FY 66



NR-1

U.S. Navy

D: 372 tons surfaced/700 submerged S: 4.6/3.6 kts Dim: $41.78 \times 3.81 \times 4.57$ M: 1 pressurized-water reactor, turboelectric drive; 2 props

Man: 2 officers, 3 men, 2 scientists

Remarks: Project approved 18-4-65. Fitted for all oceanographic missions, military and civilian, and for bottom salvage. Thick cylindrical hull. Wheels for moving on ocean bottom. A very successful vehicle, but cost three times the original estimate. No periscope, uses television cameras. Four ducted maneuvering thrusters. Can dive to over 800 m. Operated by Submarine Squadron 17, Bangor, Washington, since 1-84.

Bldr: Lockheed Missile & Space Co., Sunnyvale, Calif. • 2 DSRV class

Accepted In serv. DSRV 1 Mystic 6-8-71 4-11-77 DSRV 2 AVALON 28-7-72 1-1-78

D: 30.5 tons **S:** 4.5 kts **Dim:** $15.0 \times 2.5 \times 3.28$ (high) M: 1 electric motor; 1 shrouded-pivoting prop; 15 hp

Man: 4 tot. + 24 recued men

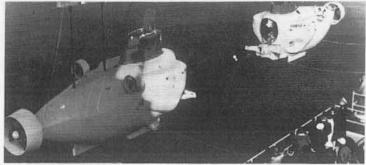
REMARKS: The DSRVs are intended to: operate at a maximum depth of 1,500 m; stand pressure equal to 2,750 m; dive and rise at 30 m a minute; make a maximum speed of 5 knots while submerged; remain submerged for 30 hours at 3 knots; maintain station in a 1-knot current; and operate all machinery even while submerged at a 45° angle. DSRVs can bring to the surface as many as 24 men at one time. Motor, powered by a silver-zinc battery, turns a regular propulsion propeller and two thrusters, one for-

DEEP-SUBMERGENCE RESEARCH CRAFT (continued)

ward and one aft, which can be positioned to permit a close approach to a sunken object. Their size and weight were determined by the possible need to airlift them in an Air Force Starlifter (Lockheed C-141A) cargo plane. Additional equipment, especially a truck transport for the DSRV, would be carried in a second Starlifter. In addition, SSNs have received the equipment necessary to fasten a DSRV to their decks and carry it at 15 knots. The SSN will serve as a base for the DSRV while it awaits the arrival of a Pigeon-class rescue ship (ASR). Hull consists of two HY-140 steel spheres surrounded by a fiberglass outer hull. One received a potassium superoxide (KO₂) breathing system in 1982, providing 480 man hours submerged endurance. A cost overrun of nearly 1,500 percent prevented the procurement of any more DSRVs. Twelve were originally planned. Names were assigned in 1977. Photo in addenda.

♦ 2 Turtle class Bldr: General Dynamics, Groton, Conn.

DSV 3 TURTLE (ex-Autec-I) DSV 4 SEA CLIFF (ex-Autec-II)



Sea Cliff and Turtle - at "launch"

1968

D: 21 tons (Sea Cliff: 29) S: 2 kts Dim: 7.9 (Sea Cliff: 9.4) × 2.4 (3.7 over thrusters)

M: 1 electric motor; 1 prop; 2 thrusters Man: 2 men + 1 scientist Endurance: 16 hrs.

Remarks: Launched on 11-12-68. Could originally descend to 1,980 m. Spherical pressure hull of HY-100 steel. The Turtle was modified in 1979 to descend to 3,660 meters, and the Sea Cliff received a titanium pressure sphere in 1981-84, permitting 6,100-m descents. Air transportable. Fitted with external manipulator arms. Eight hours' endurance at 1 knot. Operated by Submarine Development Group 1, San Diego. Sea Cliff dove to 6,096 m on 10-3-85, supported by Point Loma (AGDS 1). Turtle had a serious fire 17-8-84 and was still in repair at end-1985. Three craft are usually supported by the chartered R.V. Lulu, a 230-ton, 32.0 × 15.0 m catamaran.

♦ 1 Alvin class Bldr: General Mills, Minneapolis, Minn. (In serv. 1965)

DSV 2 ALVIN

D: 16 tons S: 2 kts Dim: 6.9 × 2.4 × . .

M: Electric motors; 1 prop; 2 thrusters Man: 1 man + 2 scientists

Remarks: Operated by civilian Woods Hole Oceangraphic Institute on contract to the Navy. Sank on 16-10-68, but raised, repaired, and returned to service in 11-72. Single titanium pressure sphere permits descents to 4,000 m. Supported by the Woods Hole Institute research ship Atlantis II. Trieste II (DSV 1) was stricken 1-4-85. Nemo (DSV 5) is a remote-controlled vehicle, now on display at the Naval Ocean Science Center, San Diego.

SERVICE CRAFT

Note: The force still consists largely of craft built during World War II. The units marked with an asterisk are non-self-propelled.

1 former West German floating dry dock*
 Bldr: Seebeckwerft AG, Bremerhaven

AFDB 8 Machinist (In serv. 1980)

Lift Capacity: 39,300 tons Dim: 251.46 (285.31 on blocks) × 53.54 (42.77 between wingwalls) × 10.0 over blocks (flooded)

Remarks: Purchased from builder 5-8-85 and towed to the Philippines for service at Subic Bay, to arrive 3-86. Has two 7.5-ton traveling cranes.

♦ 3 AFDB large auxiliary floating dry docks*

| | Bldr | In serv. | Capacity (tons) |
|-------------------|-----------------|----------|-----------------|
| AFDB 2 | Mare Island NSY | 4-44 | 30,000 |
| AFDB 4 | Mare Island NSY | 8-44 | 55,000 |
| AFDB 7 Los Alamos | Mare Island NSY | 3-45 | 31,000 |

REMARKS: AFDB 2 was originally a 10-section, 90,000-ton-capacity dock. Sections C, D, H, and I of AFDB 2 are active at Subic Bay, with the remainder in reserve at Pearl Harbor. The others were originally all 7-section docks. AFDB 4 is in reserve, while sections C, E, and G of ADFB 7 are active at Holy Loch, Scotland, in support of SSBNs; sections A and B are in reserve. Artisan (AFDB 1) was placed on sale in 1983. AFDB 3, long in reserve, was transferred to the state of Maine in 1982 for use by Bath Iron Works at Portland; AFDB 5 was transferred to the city of Port Arthur, Texas, in 1984 and leased to Todd Shipyards.

♦ 3 AFDL small auxiliary floating docks*

| | Bldr | In serv. | Capacity (tons) |
|-------------------|-----------------------|----------|-----------------|
| AFDL 6 DYNAMIC | Chicago Bridge & Iron | 3-44 | 1,000 |
| AFDL 23 ADEPT | G.D. Auchter | 12-44 | 1,900 |
| AFDL 25 UNDAUNTED | | 1944 | 1,000 |

Remarks: All one-piece docks. Diligence (AFDL 48), built of concrete, and the only postwar unit, was commercially leased 23-3-80. Reliance (AFDL 47) had been reacquired 18-1-81 from Maritime Commission reserve, but was returned 12-8-81. Seven additional units (AFDL 12, 15, 16, 21, 22, 29, 40) are leased to commercial shipbuilders and ship repairers; AFDL 37, 38, and 45, long on lease, were sold outright 1-10-81; AFDL 8 was stricken 1-12-81 and sunk as a fishing reef; AFDL 2 was stricken 15-11-81, AFDL 9 was stricken 15-7-82, AFDL 19 and 41 sold 4-83, Endeavor (AFDL 1) stricken 1985. AFDL 25 re-acquired 6-84, refitted, and towed to Guantánamo Bay 9-84. AFDL 6 and 25 are 61.0 m by 19.5 m; AFDL 23 is 87.8 × 19.5 m.

♦ 6 AFDM medium auxiliary floating dry docks* Bldr: Everett Pacific

(AFDM 8: Chicago Bridge & Iron, AFDM 14: Pollock-Stockton SB, Cal.)

| | In serv. | | In serv. |
|------------------------------------|----------|-----------------------------------|----------|
| AFDM 5 RESOURCEFUL (ex- YPD 21) | 2-43 | AFDM 8 RICHLAND (ex- YFD 63) | 12-44 |
| AFDM 6 COMPETENT (ex- YFD 62) | 6-44 | AFDM 10 RESOLUTE (ex) | 1945 |
| AFDM 7 Sustain (ex-YFD 63) | 1-45 | AFDM 14 STEADFAST (ex- YFD 71) | 7-45 |



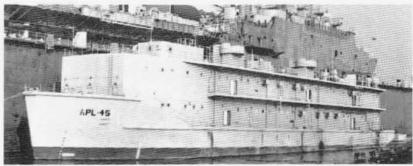
Sustain (AFDM 7) - with YD 214 alongside

J. Jedrlinic, 1980

Remarks: All active and of 18,000-ton capacity. 189.6 \times 37.8 m, except AFDM 14: 14,000 tons, 182.3 \times 36.0 m. AFDM 14 reclassified 1-2-83. AFDM 7 overhauled 1983. AFDM 1-3, 9 are on commercial lease.

♦ 17 APL barracks craft*

APL 2, 4, 5, 15, 18, 19, 29, 31, 32, 34, 42, 43, 45, 50, 54, 57, 58



APL 45

W. Donko, 7-84

Remarks: Built 1944-45. All active. 2,600 tons (fl), 79.6 × 15.0 × 2.6. Can accommodate 6 officers and 680 men. Have 300-kw generator capacity.

♦ 2 ARD auxiliary repair dry docks* Bldr: Pacific Bridge, Alameda, Cal.

ARD 5 Waterford (In serv. 6-42) ARD 30 San Onofre (In serv. 8-44)



San Onofre (ARD 30) - Dixon (AS 37) in background

L. & L. Van Ginderen, 5-82

Remarks: Both active, 3,500-ton capacity. Sisters West Milton (ARD 7) to Maritime Commission for lay-up 16-7-81, ARD 24 stricken 15-1-80.

♦ 2 Shippingport-class submarine support docks*

ARDM 4 SHIPPINGPORT ARDM 5 ARCO

Bethlehem Steel, Sparrows Pt., Md. 1979
Todd Pacific, Seattle 2-86



Shippingport (ARDM 4) - with special pier facilities

U.S. Navy, 1979

Capacity: 7,800 tons (8,400 emergency) Dim: 150.0 × 29.3 × 16.6 (max.)

Remarks: Intended to support Los Angeles-class submarines. Length of blocks: 118 m. 20.7 m clear height inside. Require shore support. Have 2/25-ton cranes. ARDM = Medium Support Dock. ARDM 5 ordered 13-10-82. First floating dry docks built for U.S. Navy since World War II. ARDM 5 laid down 25-7-83, launched 14-12-84. Have accommodations for 12.

♦ 3 ARD 12-class submarine support docks*

Bldr: Pacific Bridge, Alameda,

ARDM 1 Oak Ridge (ex-ARD 19) 3-44
ARDM 2 Alamagordo (ex-ARD 26) 6-44
ARDM 3 Endurance (ex-ARD 18) 2-44

Capacity: 3,500 tons Dim: 149.4 × 24.7

Remarks: Converted from ARD auxiliary repair docks to service nuclear submarines. One end has a pointed, ship-type bow to permit towing. ARDM 1 refit completed 6-85.

• 1 YAG miscellaneous auxiliary yard craft (In serv. 1966)

YAG 62 DEER ISLAND



Deer Island (YAG 62)

MAR, Inc., 1983

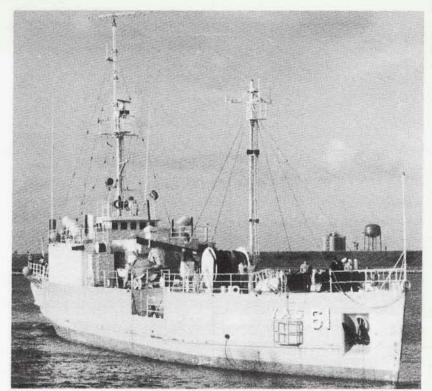
D: . . . S: 10.5 kts Dim: 36.58 × 8.53 × 2.13

M: 2 diesels; 2 props; . . . hp Electron Equipt: Radar: 2/. . . nav. Range: 6,200/10.5 Man: 20 crew and scientists.

Remarks: 172 grt/117 nrt, former oilfield supply tug placed on Navy List 15-3-83 and operated for David Taylor Naval Ship Research and Development Center from Port Everglades, Fla., by MAR Inc. for sound-quieting trials.

• 1 YAG miscellaneous auxiliary yard craft Bldr: Zenith Dredge Co., Duluth Minn

YAG 61 MONOB ONE (ex-IX 309, ex-YW 87) Laid down L In serv. 1-12-42 3-4-43 11-11-43



Monob One (YAG 61) - yellow hull, masts, white superstructure

U.S. Navy, 12-80

D: 1,390 tons (fl) **S:** 11 kts **Dim:** 53.0 × 10.1 × 4.8 **M:** 1 Caterpillar diesel; 1 prop; 850 hp **Range:** 2,500/9

Remarks: Redesignated from IX 309 on 1-7-70. Former water lighter modified in 1959 to support the ballistic-missile submarine silencing program. Based at Port Canaveral, Fla., and operated by the David Taylor Naval Ships Research and Development Center, Carderock, Md., Acoustic Trials Detachment. Has four laboratories, totaling 279 m². To be replaced in 1988-89 by Hayes (T-AG 195, ex-T-AGOR 16).

♦ 227 (+20 + 16) YC open lighters*

YC 306-1571



YC 1433, pushed by Anoka (YTB 810)

J. Jedrlinic, 1984

Remarks: Built 1915-83. Five are in reserve. YC 1517 to YC 1522 built 1976-77, YC 1523-1527 built 1978-79, YC 1528-1551 built 1979-83. Three authorized under FY 82 budget. Current design is YC 1554 class, of which six were authorized FY 83, 14 authorized FY 84, and 11 in FY 85, and 2 in FY 86, are programmed: 250 tons light (660 fl); 33.53 × 9.75 × 1.98 (max.). YC 1458 was stricken 15-6-82, YC 1515 stricken 1-8-82. YC 1386 sold 15-10-82. YC 1542 sold 1-2-83. Ex-YD 89 reclassified YC 1553 on 1-6-83; YFN 1214 reclassified YC 1552 on 15-3-83; YC 1530 reclassified a camel, 1-6-24; YC 1546 reclassified floating equipment 6-84; YC 1435 stricken 6-85.

♦ 1 YCF car float*

YCF 16 (In serv. 25-1-42)

Remarks: 45.72 × 10.21; used to transport railroad cars. Active.

♦ 5 (+0+1) YCV aircraft transportation lighters*

YCV 8 (In serv. 4-3-44) YCV 11 (In serv. 6-10-44) YCV 17 (In serv. 7-89) YCV 10 (In serv. 21-8-44) YCV 16 (In serv. 29-8-45)

Remarks: 2,480 tons (fl); 28.96×9.14 ; 80-ton capacity. All active. YCV 17 to be requested FY 88

• 56 YD floating cranes*

Remarks: Built 1913-70s. All active. YD 171, ex-German, has largest capacity: 350 tons: refitted 1984-85, built 1941 by Demag, Bremerhaven $(62.5\times33.5\times114.0$ high, uses 3,560 m wire rope!). Most U.S. Navy YD are rectangular barges. Typical data: 1,630 tons (fl), 42.7×21.3 , 90-100 tons capacity. One new YD authorized FY 82, 3 in FY 83, 5 in FY 84, 3 under FY 85: 2 in FY 86 and 3 each programmed for FY 87-88, 1,650 tons (fl); $54.4\times24.4\times2.0$. YD 149, 154, 181, 189, 231, 241 stricken 15-1-85; all but YD 189 were in reserve. YD 88 stricken 1-9-85. YD 145 stricken 15-1-86.

• 3 YDT diving tenders

YDT 14 PHOEBUS (ex YF 294), YDT 15 SUITLAND (ex-YF 336): 600 tons, 40.4 × 9.1, 1 Union diesel: 600 hp (In serv. 10-12-42 and 16-6-43, respectively) YDT 16* Tom O'MALLEY (ex-YFNB 43): 2,000 tons (fl), 79.6 × 14.6

REMARKS: YDT 3 (ex-YFNG 1) stricken 1984.

♦ 2 YF covered lighters, YF 852 class

| | Bldr | L | In serv. |
|----------------|-------------------------------|----------|----------|
| YF 866 KODIAK | Missouri Valley Bridge & Iron | 26-10-45 | 17-11-45 |
| YF 885 KEYPORT | Defoe SB | 19-5-45 | 4-8-45 |

D: 300 tons light (505 fl) S: 10 kts Dim: 40.5 × 9.1 × 2.7

M: 2 G.M. diesels; 2 props; 1,000 hp Electric: 120 kw Fuel: 40 tons

Remarks: YF 885 active at Torpedo Testing Station, Keyport, Washington, with A: 3/324-mm Mk 32 ASW TT; has "omnithruster" bow-thruster. YF 866 in reserve. Sister YF 862 stricken from reserve 15-2-85.

• 6 YFB ferryboats

YFB 83 Bldr: John H. Mathis Co., Camden, N.J. (In serv. 4-49)

D: 500 tons (fl) S: 8.5 kts Dim: 49.4×17.7 M: 2 diesels Cargo: 500 passengers, 38 vehicles

YFB 87 Bldr: Western Boat (In serv. 5-70)

D: 773 tons (fl) Dim: 54.9 × 18 M: 2 diesels

YFB 88 to YFB 91 (ex-LCU 1646, ex-LCU 1638 to LCU 1640)

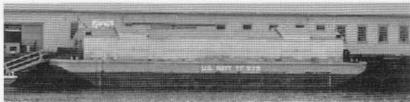
D: 390 tons (fl) S: 10 kts Dim: 41.0 × 9.0

M: 4 G.M. diesels; 2 props; 1,200 hp

REMARKS: Built 1965-69. Modified 1969-70. All active.

◆ 155 (+8) YFN covered lighters*

YFN 862-1264



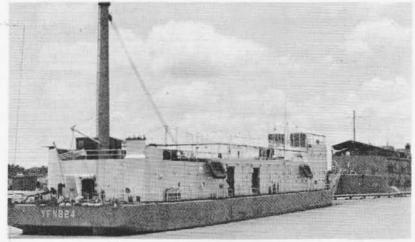
YFN 979 (misnumbered on side)

S. Terzibaschitsch, 4-84

Remarks: Built 1940-84. 153 active. Majority are 685 tons (fl), 33.5 × 9.8. Large rectangular deckhouse. Nine YFN 1254 class authorized under FY 81 (11 actually built), 6 approved under FY 85, 2 under FY 86: 260 tons light (660 fl); 33.53 × 9.75 × 2.23 m; have a small deckhouse; will be delivered 4-86 to 10-86. YFN stricken, 15-1-86.

• 13 YFNB large covered lighters*

YFNB 5, 8, 25, 30, 31, 32, 34, 36, 37, 39, 41, 42, 47 (ex-YRR9)



YFNB 24 -- now stricken

1969

Remarks: Built 1945. All active. All 831 tons light (2,780 fl), $79.2 \times 14.6 \times 2.9$. YFNB 47 reclassified 11-83. YFNB 4, on loan to Maritime Administration since 1980, transferred permanently 1-6-85.

2 YFND dry-dock companion craft*

YFDN 5 (ex-YFN 268; in serv. 3-2-41) YFND 29 (ex-YFN 974; in serv. 28-8-45) REMARKS: 590 tons (fl), 33.53 × 9.75, converted YFN. YFND 5 in reserve.

♦ 14 YFNX special-purpose lighters*

YFNX 4, 7, 15, 20, 22-26, 30-33

Remarks: All active except YFNX 7. Most converted YFN. Delivered 1942-70. YFNX 30 (200 tons light; 34.0 × 10.0 × 1.7 m) at Naval Ocean Science Center, San Diego, supports the remote-controlled submersible CURV II. YFNX 4-24 are 33.5 m × 10.0 × 1.7 m; YFNX 25, 26 are 38.4 × 10.0. Several have maneuvering propulsion systems.

YFP floating power barges*

YFP 3 (ex-YC 1114) YFP 11 (ex-YFN 1207) YFP 12 (ex-YFN 1216)

Remarks: 33.5×9.7 -m. YFP 12 in reserve. Completed: YFD 3 in 4-45, other two n 1965.

YFP 14 INDUCTANCE (ex-Army BD 6235)

REMARKS: Built 1943-45. Transferred 1-10-77.

Note: Refrigerated cargo lighter YFR 888 stricken 15-2-85.

♦ 4 YFRN refrigerated cargo lighters*

YFRN 385 (ex-YF 385) YFRN 412 (ex-YF 412) YFRN 997 (ex-YF997) YFRN 1235 (ex-U.S. Army BR 6435)

REMARKS: Built 1943-45. All in reserve. Most 45.7 × 10.4. Sisters YFRN 1256 and 1257 stricken 3-84.

4 YFRT covered lighter range tenders

| | Bldr | Laid down | L | In serv. |
|----------|----------------------------------|-----------|------|----------|
| YFRT 287 | Norfolk NSY | 2-41 | 5-41 | 7-41 |
| YFRT 451 | Basalt Rock Co., Napa, Cal. | 2-44 | 7-44 | 10-44 |
| YFRT 520 | Erie Concrete & Steel, Erie, Pa. | 10-42 | 3-43 | 8-43 |
| YFRT 523 | Erie Concrete & Steel, Erie, Pa. | 3-45 | 8-45 | 9-45 |

D: 650 tons (fl) S: 9.5 kts Dim: 40.5 × 9.1 × 2.7

A: 3/324-mm Mk 32 ASW TT

M: 2 Union (YFRT 287: Cooper-Bessemer) diesels; 600-1,000 hp

Remarks: Torpedo trials craft. YFRT 287 built as such, rest converted from YFR. Sister YFRT 418 stricken 2-84. To be replaced late 1980s by new-construction YTT.

• 11 YFU harbor utility craft

YFU 50 (ex-LCU 1486): see LCU 1466 class data; in reserve

YFU 74, YFU 75, YFU 79, YFU 81 (1967-68): Sisters to IX 506 (ex-YFU 82). All in reserve. Delivered 1967-68. Sisters YFU 71, 72, 76, 77 to Dept. of the Interior, 1-12-84. YFU 83, YFU 91 (ex-LCU 1608), YFU 94 (ex-LCU 1488), YFU 97 (ex LCU 1611), YFU 100 (ex-LCU 1610), YFU 102 (ex-LCU 1642). All LCU 1610 class converted, except YFU 83, built for purpose and YFU 94, in reserve. Built 1955-68 by Pacific Coast Engineering Co., Alameda, Cal. YFU 98 (ex-LCU 1615) and YFU 101 (ex-LCU 1612) stricken 1-86. YFU 79 converting to Helicopter Landing Trainer (HLT 1) by Bender SB; to deliver 3-86.



YFU 100-in standard LCU configuration

R. Scheina, 7-84



YFU 91 - sides cut down, superstructure heightened

L. & L. Van Ginderen, 1984

♦ 3 YGN garbage lighters*

YGN 80, 81, 83 Bldr: Zidel, Portland, Ore. (In serv. 1970-71)

Remarks: All active. 309 tons light (855 fl), 37.8 × 10.7 rectangular barges. Have hopper-type bottoms to permit dumping at sea. YGN 70 and 82, redesignated as "equipment" 1-84, remain available also.

* 2 YHLC salvage lift craft, heavy*

YHLC 1 CRILLEY YHLC 2 CRANDALL



Crilley (YHLC 1) - outboard Crandall (YHLC 2)

J. Jedrlinic, 1980

Remarks: Ex-Hiev and ex-Griep purchased from Germany for Vietnam War duties. Built in 1940s. In the James River Maritime Commission reserve fleet since 9-76, but remain Navy property.

• 5 YM dredge

YM 17 YM 32 YM 33 YM 35 YM 38

Remarks: Characteristics vary. YM 32 and YM 33 in reserve. YM 17 (500 tons) in service 1934; YM 33, 35, in service 1970, are only 13.1 m and 21.3 m overall, respectively.

♦ 2 YNG gate craft*

YNG 11 YNG 17

Remarks: Built 1941 to tend harbor-defense nets. D: 225 tons (fl); Dim: 33.5 × 10.5.

1 YO 46-class fuel-oil lighter—in reserve Bldr: Lake Superior SB, Superior, Wisc.

YO 47 CASING HEAD (In serv. 11-42)

D: 950 tons (2,660 fl) S: 10 kts Dim: 71.6 × 11.3 × 4.6 Cargo: 1, 350 tons M: 2 Enterprise diesels; 820 hp. Electric: 280 kw Man: 34 tot.

9 YO 43† and YO 65 class Bldr: Jeffersonville Boat & Machine Co., Jeffersonville, Ind. (except: YO 129: Smith SY, Pensacola, Fla.; YO 203: Manitowoc SB, Manitowoc, Wisc.; YO 241: John H. Mathis, Camden, N.J.)

| | 7 | | | | |
|--------|----------|--------|----------|------------|----------|
| | In serv. | | In serv. | | In serv. |
| YO 129 | 4-44 | YO 224 | 10-45 | YO 241† | 10-43 |
| YO 203 | 8-45 | YO 225 | 10-45 | (ex-YOG 5) | |
| YO 220 | 8-45 | YO 228 | 11-45 | | |
| YO 223 | 9-45 | YO 230 | 12-45 | | |



YO 203

G. Arra, 11-85

D: 440 tons light (1,390 fl) S: 9 kts Dim: 53.04 × 9.75 × 3.96 M: 1 G.M. (see remarks) diesel; 1 prop, 640 hp Electric: 80 kw

Remarks: Cargo is 900 tons/6,570 bbl. YO 129 has a Union diesel, 560 hp; YO 241 has a Fairbanks-Morse diesel, 480 hp. YO 228 and YO 241 are in reserve. Sisters YO 106 stricken 12-83, YO 200 stricken 7-83, YO 264 stricken 15-11-85. Same basic design as 53.04-mm YOG and YW.

♦ 1 YO 153 class Bldr: Ira S. Bushey, Brooklyn, N.Y.—In reserve

YO 153 (In serv. 7-43)

D: 370 tons light (1,095 fl) S: 10 kts Dim: $47.63 \times 9.32 \times 3.66$ M: 1 Fairbanks-Morse diesel; 1 prop; 525 hp Electric: 39 kw

Remarks: Cargo: 660 tons/6,071 bbl. In reserve.

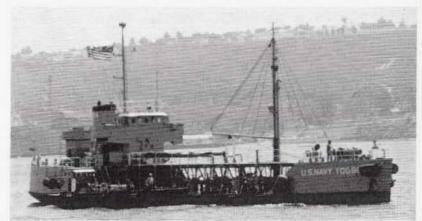


YO 153 - in reserve at Philadelphia, with 5 reserve YO/YOG/YW

A.D. Baker, 8-84

7 YOG . . . gasoline lighters Bldrs: RTC SB, Camden, N.J. (except: YOG 78, 79: Puget Sound NSY; YOG 68: George Lawley & Sons, Neponset, Mass.)

YOG 58, YOG 68, YOG 78, YOG 79, YOG 88, YOG 93, YOG 196 (ex-YO 196) (In serv. 1945-46)



YOG 88

W. Donko, 7-83

D: 440 tons light (1,390 fl) Dim: 53.04 × 9.75 × 3.96 M: 1 G.M. diesel; 1 prop; 640 hp Electric: 80 kw

REMARKS: Four in reserve, Carry about 950 tons aviaton fuel. YOG 58 has a Union

♦ 13 YOGN gasoline barges*

YOGN 8, 9, 10, 26, 110, 111, 113, 114, 115, 122, 123, 124, 125

Remarks: Built 1943-71. All active. Carry aviation fuel. All 1,270-1,360 tons (fl), approx. 50×10.7 m.

♦ 47 (+3) YON fuel-oil barges

Remarks: Most built 1942-76. 46 active. Typical unit: 1,445 tons (fl); 50.3 × 12.0 × 2.7. YON 305, 306 built under FY 80. YON 255 and later (30 units) were built 1964-76. Five are ex-U.S. Army, including YON 305, 306, transferred 7-79. YON 235 is ex-YW 73. Can carry a variety of fuels. Three YON 307 requested under FY 87: 1,600 tons (fl); 56.0 × 10.7 × 3.0.

♦ 12 YOS oil-storage barges*

YOS 8, 10-12, 15-17, 20, 21, 24, 28 (ex-YC 707), 33 (ex-YSR 46), 34

Remarks: Built 1944-65. All active. Ten: 100 tons light; 24.4 × 10.4; others: 140 tons light; 33.5 × 10.4. YOS 34 (ex-Army OB61-2) acquired 1-9-79. Two new YOS requested under FY 87: 725 tons (fl).

◆ 7 (+20) YP 676-class patrol craft/training tenders Bldrs: YP676-682: Peterson, Bldrs., Sturgeon Bay, Wisc.; others: Marinette SB., Marinette, Wisc.

| | Laid | L | In serv. | | Laid down | L | In serv. |
|--------|----------|----------|----------|--------|--------------|---------|----------|
| YP 676 | 7-4-83 | 9-4-84 | 14-11-84 | YP 681 | 29-10-84 | 1-6-85 | 9-95 |
| YP 677 | 10-10-83 | 23-6-84 | 5-12-84 | YP 682 | 7-1-85 | 8-85 | 10-85 |
| YP 678 | 15-12-83 | 3-11-84 | 5-85 | YP 683 | 23-7-85 | 30-4-86 | 8-86 |
| YP 679 | 18-4-84 | 11-12-84 | 7-85 | YP 684 | 9-85 | 29-8-85 | |
| YP 680 | 2-7-84 | 23-3-85 | 29-7-85 | YP 685 | 10-85 | 8-10-85 | |

| YP 686 | 27-1-86 | | YP 691 | | | 22.2 |
|--------|---------|-------|------------|----------|-----|-------|
| YP 687 | 3-86 | | YP 692 | | | |
| YP 688 | 4-86 | | YP 693 | 1919-191 | *** | |
| YP 689 | 5-86 | | YP 694 | | | |
| YP 690 | 6-86 | 3 434 | YP 695 | | | 10-87 |



YP 677

L. & L. Van Ginderen, 12-84



YP 678

L. & L. Van Ginderen, 5-85

D: 172.4 tons (fl) S: 12 kts Dim: 32.91 (30.99 pp) × 7.30 × 1.75 Electric Equipt: Radar: 1/. . . nav.

M: 2 G.M. 12 V71N diesels; 2 props; 875 hp Electric: 100 kw

Man: 2 officers, 4 men, 24 midshipmen

Remarks: Wooden construction boats to replace YP 654 class. YP 676 ordered 15-10-82; YP 677-682 ordered 25-5-83; YP 683-695 ordered 12-6-84; YP 696-702 on 13-9-85.

17 YP patrol craft In serv. 2-58 to 11-79
 Bldrs: YP 654-663, 666: Stephens
 Bros., Stockton, Cal; YP 664, 665: Elizabeth City SY, Elizabeth City, N.C.; others:
 Peterson Bldrs., Sturgeon Bay, Wisc.

YP 654, 657, 662-666, 668-675



YP 658 (now a COOP trainer)

G. Arra, 1982

D: 60 tons (71 ft) S: 13.3 kts Dim: 24.51 × 5.72 × 1.6 M: 2 G.M. 6-71 diesels; 2 props; 590 hp Electric: 20 kw Man: 2 officers, 8 men, 24 midshipmen

Remarks: Wooden construction. Seven used for navigation and maneuvering training at Naval Academy, Annapolis, and rest at Naval Officer Candidate School, Newport. Not armed. YP 655 fitted for oceanographic training at Naval Academy. Sisters YP 659 and YP 660 were transferred to the COOP minehunting program in 9-85 and 11-85. Fifteen others are to become COOP craft in FY 86-88. YP 655, 656, and 667 were retyped as "boats" during 8-85 and transferred to the Surface Warfare Officers' School, San Diego.

♦ 5 YPD floating pile drivers*

YPD 37, 41, 42, 45 (ex-YC 1498), 46 (ex-YFNB 35)

Remarks: Built 1943-65. YPD 42 in reserve. Most built on standard 24.4 × 10.4 barge hulls, except YPD 6: 79.6 × 14.6; 2,700 tons (fl)

♦ 27 YR floating workshops*

YR 9, 25-27, 29, 36, 44, 46, 50, 60-65, 68, 70, 73, 76-78, 83 (ex-YRL 5), 84-88



1969

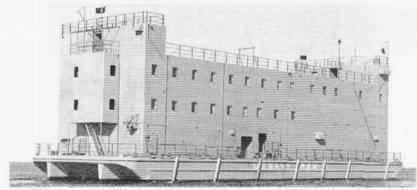
Remarks: Built 1941-45. Twenty-one active. Most 520 tons light (770 fl); $46.6 \times 10.7 \times 1.8$. Differ in equipment.

♦ 5 YRB repair and berthing barges*

YR 1 (ex-YFN 258), 2, 22 (ex-YC 1079), 25 (ex-YFN 298), 29 (ex-YRST 5)

Remarks: All 33.5×9.1 . Built 1940-45. Support submarines.

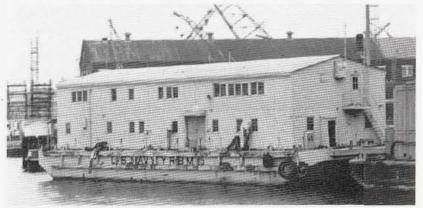
◆ 38 YRBM repair, berthing, and messing barges*
 YRBM 1-6, 8, 9, 11-15, 20, 23-46



YRBM 31

YR 26

Marinette Marine, 10-80



YRBM 15

W. Donko, 7-84

Remarks: Built 1955-83. All active; support submarines and ships in overhaul. Marinette SB constructed YRBM 31 to YRBM 46 during 1979-83: 688 tons; 44.5 × 14.0 × 1.3; accommodations for 26 officers, 231 men. Have office, workshop, eating, and recreation spaces, 96-seat training theater, galley, etc. YRBM 23-30, also by Marinette (In serv. 8-70 to 6-71) of similar dimensions, but 585-tons (fl). YRBM 20 is 2,700 tons, 79.6 × 14.6; remainder are approx. 310 tons (fl), 33.5 × 10.4.

♦ 4 YRDH floating dry dock workshops, hull*

YRDH 1 (ex-YR 55), 2 (ex-YR 56), 6, 7 (In serv. 1943-44)

REMARKS: YRDH 6 active. 770 tons (fl), 46.6 × 10.7 × 1.8.

♦ 4 YRDM floating dry-dock workshops, machinery*

YRDM 1 (ex-YR 52), 2 (ex-YR 53), 5, 7 (In serv. 1943-44)

REMARKS: YRDM 5 active. 770 tons (fl), 46.6 × 10.7 × 1.8.

♦ 12 YRR radiological repair barges*

| YRR 1 (ex-YR 49) | YRR 5 (ex-YRDM 8) | YRR 11 (ex-YRDH 3) |
|--------------------|-------------------|--------------------|
| YRR 2 (ex-YR 74) | YRR 6 (ex-YR 39) | YRR 12 ex-YRDH 4) |
| YRR 3 (ex-YFN 333) | YRR 7 (ex-YR 31) | YRR 13 (ex-YRDM 3) |
| YRR 4 (ex-YFN 685) | YRR 10 (ex-YR 79) | YRR 14 (ex-YRDM 4) |

Remarks: In serv. 1937-45; all active. All converted from other barge-hulled functions: 770 tons (fl), 46.6 × 10.7 × 1.8. Sister YRR 9 reclassified YFND 47 in 11-83.

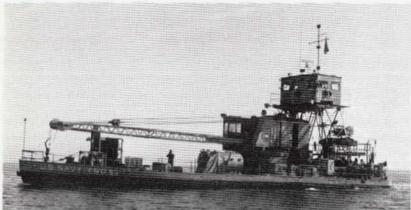
• 3 YRST salvage-craft tender*

YRST 1 (ex-YDT 11) YRST 2 (ex-YDT 12) YRST 6 (ex-YFNX 10)

REMARKS: In serv. 1945; all active. YRST 3 and YRST 5 stricken 4-84. YRST 1, 2 are 2,700 tons (fl), 79.6 × 14.6; YRST 6 is 670 tons (fl), 33.5 × 10.7. All are rectangular barges.

• 4 YSD seaplane wrecking derricks

YSD 39, 53, 63, 74 (In serv. 1944)



YSD 53

M. Curtin, 11-85

D: 240 tons (276 fl) S: 10 kts Dim: 31.7 × 9.5 × 1.2 M: 2 Superior diesels; 2 props; 320 hp

Remarks: All active. Employed as 10-ton capacity, self-propelled cranes. Sister YSD 15 stricken 4-84.

◆ 20 YSR sludge-removal barges*

Remarks: Built 1932-46. Eighteen active. Most either 24.4 × 9.8 or 33.5 × 10.4. YSR 39 stricken 8-85, YSR 17 stricken late 1985; both to other U.S. government agencies.

• 81 YTB large harbor tugs (SCB 147/147A type) Bldrs: YTB 752, 753: Christy Corp., Sturgeon Bay, Wisc.; YTB 756-759, 763-766, 799-802: Southern SB Corp., Slidell, La.; YTB 760-761: Jakobson SY, Oyster Bay. New York; YTB 762: Commercial Iron Wks., Portland, Ore.; YTB 767-771: Mobile Ship Repair, Mobile, Ala.; YTB 774-798, 816-836: Marinette Marine Corp., Marinette, Wisc.; YTB 803-815: Peterson Bldrs, Sturgeon Bay, Wisc.

| | William I Consultation Consultation | |
|----------------------|-------------------------------------|----------------------|
| YTB 752 Edenshaw | YTB 783 Redwing | YTB 810 Anoka |
| YTB 753 MARIN | YTB 784 KALISPELL | YTB 811 HOUMA |
| YTB 756 PONTIAC | YTB 785 WINNEMUCCA | YTB 812 ACCOMAC |
| YTB 757 OSHKOSH | YTB 786 TONKAWA | YTB 813 POUGHKEEPSIE |
| YTB 758 PADUCAH | YTB 787 KITTANNING | YTB 814 WAXAHATCHIE |
| YTB 759 BOGALUSA | YTB 788 WAPATO | YTB 815 NEODESHA |
| YTB 760 NATICK | YTB 789 Tomahawk | YTB 816 CAMPTI |
| YTB 761 OTTUMWA | YTB 790 MENOMINEE | YTB 817 Hyannis |
| YTB 762 Tuscumbia | YTB 791 MARINETTE | YTB 818 Mecosta |
| YTB 763 Muskegon | YTB 792 Antigo | YTB 819 IUKA |
| YTB 764 MISHAWAKA | YTB 793 Piqua | YTB 820 WANAMASSA |
| YTB 765 OKMULGEE | YTB 794 MANDAN | YTB 821 TONTOGANY |
| YTB 766 WAPAKONETA | YTB 795 KETCHIKAN | YTB 822 Pawhuska |
| YTB 767 Apalachicola | YTB 796 SACO | YTB 823 CANONCHET |
| | | |

YTB 768 ARCATA YTB 797 TAMAQUA YTB 824 SANTAQUIN YTB 769 CHESANING YTB 798 OPELIKA YTB 825 WATHENA YTB 770 DAHLONEGA YTB 799 NATCHITOCHES YTB 826 WASHTUENA YTB 771 KEOKUK YTB 800 EUFAULA YTB 827 CHETEK YTB 774 NASHUA YTB 801 PALATKA YTB 828 CATAHECASSA YTB 775 WAUWATOSA YTB 802 CHERAW **ҮТВ 829 Метасом** YTB 776 WEEHAWKEN YTB 803 NANTICOKE YTB 830 PUSHMATAHA YTB 777 Nogales YTB 804 AHOSKIE YTB 831 DEKANAWIDA YTB 832 PETALESHARO **YTB** 778 АРОРКА YTB 805 OCALA YTB 779 MANHATTAN YTB 806 Tuskegee YTB 833 SHABONEE YTB 780 SAUGUS YTB 807 Massapequa YTB 834 Newagen YTB 808 WENATCHEE YTB 835 SKENANDOA YTB 781 NIANTIC YTB 782 MANISTEE YTB 809 AGAWAN YTB 836 POKAGON



Wathena (YTB 825)

L. & L. Van Ginderen, 9-84

D: 286 tons (356 fl) S: 12.5 kts Dim: 33.05 × 9.3 × 4.14 M: 1 Fairbanks-Morse 38D8 × 12 diesel; 1 prop; 2,000 hp Electric: 120 kw Fuel: . . . Range: 2,000/12 Man: 12 tot.

Remarks: Built 1959-70. YTB 752 to YTB 759 have a less-streamlined superstructure, and are considered a separate class (SCB 147 type); YTB 752, 753 have Alco diesels. All active. Minor differences in displacement between units by different builders. Three also built for Saudi Arabia.

Note: Planned procurement of 28 YTB 839 tugs of 3-4,000 hp was canceled 1984 in favor of contracting for tug services from private industry. The result will be lower overall costs and a diminished requirement for military personnel. Nearly all surviving active YTL and YTM-type tugs were stricken during 1985 (dates below) as a result of the same decision, and the surviving reserve fleet units will probably be discarded during 1986.

♦ 1 YTL 422 class small harbor tug Bldr: Robert Jacob, City Isl., N.Y.

YTL 602 (In serv. 10-45)

D: 70 tons (80 fl) S: 8 kts Dim: 20.1 × 5.5 × 2.4

M: 1 Hoover, Owens, Rentschler diesel; 375 hp Man: 4 tot.

Remarks: Survivor of several hundred YTL 422 class; many still in foreign navies. A few others remain in Navy use, retyped as craft. Sisters YTL 588 stricken 15-1-85, YTL 422, 438, 439, 583 stricken 15-2-85; YTL 434 stricken 30-9-85.

1 YTM 138-class medium harbor tug Cal.

Bldr: Pacific Coast Eng., Alameda,

YTM 189 NEPANET (In serv. 4-43)

D: 260 tons (310 fl)
 S: 12 kts
 Dim: 30.8 × 8.5 × 3.4
 M: 1 Enterprise diesel; 1 prop; 820 hp
 Man: 19 tot.

Remarks: In reserve. Sister Dekaury (TYM 178) stricken 30-9-85.

◆ 4 YTM 174-class medium harbor tugs Bldr: Gulfport SB, Port Arthur, Tex.

YTM 359 PAWTUCKET (In serv. 3-43)
YTM 382 COATOPA (In serv. 8-44)
YTM 383 COCHALI (In serv. 8-44)

D: 210 tons (320 fl) S: 12 kts Dim: 31.1 × 7.6 × 3.0 M: 2 G.M. diesels; 1 prop; 820 hp Man: 15 tot.

Remarks: In reserve. Sisters Chanagi (YTM 380) stricken 30-9-85, Dekanisora (YTM 252) on 31-12-85.

♦ 2 YTM 265-class medium harbor tugs Bldr: Birchfield Boiler, Tacoma, Wash.

YTM 265 Hiawatha (In serv. 11-42) YTM 268 Red Cloud (In serv. 3-43)

D: 230 tons (310 fl)
 S: 12 kts
 Dim: 30.5 × 8.5 × 3.0
 M: 1 Enterprise diesel; 1 prop; 820 hp
 Man: 14 tot.

REMARKS: Both in reserve.

♦ 3 YTM 364-class medium harbor tugs

YTM 364 Sassaba (In serv. 9-44) YTM 406 Kittaton (In serv. 1-45)

D: 260 tons (310 fl)
 S: 10.5 kts
 Dim: 30.8 × 8.5 × 3.4
 M: 2 Fairbanks-Morse diesels; 1 prop; 820 hp
 Man: 14 tot.

Remarks: Sisters Numa (YTM 399) stricken 15-1-85; Yanegua (YTM 397), Otokomi (YTM 400). Coshecton (YTM 404), Cusseta (YTM 405), Porobago (YTM 413) and

Secota (YTM 415) stricken 30-9-85; Winamac (YTM 394), Wingina (YTM 395) and Taconnet (YTM 417) stricken 31-12-85. Survivors in reserve.

• 5 YTM 518 class

YTM 534 Nadli (In serv. 7-45) YTM 544 Yatanocas (In serv. 12-45) YTM 546 Takos (In serv. 10-45)

YTM 549 Migadan (In serv. 1-46)

YTM 545 ACCOHANGE (In serv. 12-45)

D: 260 tons (310 fl) S: 11 kts Dim: 30.8 × 8.5 × 3.3 M: 2 G.M. diesels; 1 prop; 820 hp Man: 8 tot.

REMARKS: YTM 544, 545, and 549 are active; other two in reserve. Sisters Nabigwon (YTM 521), Wahaka (YTM 526), Nahoke (YTM 536), Chegodega (YTM 542), Matunak (YTM 548), Acoma (YTM 701), Arawak (YTM 702), and Moratoc (YTM 704) stricken 30-9-85; Yanaba (YTM 547) stricken 31-12-85.

♦ 1 ex-U.S. Army tug

YTM 750 HACKENSACK (ex-Army LT 2089)

D: 470 tons (fl) S: 12 kts Dim: $32.6 \times 8.0 \times 4.5$ M: 2 diesels; 1 prop; 1,200 hp

REMARKS: Active.

 2 YTM 760-class medium harbor tugs N.Y. Bldr: Jakobson SY, Oyster Bay,

YTM 760 MASCOUTAH (ex-YTB 772) YTM 761 MENASHA (ex-YTB 773)



Mascoutah (YTM 760) - with old number

PH3 E. Pichette, 1964

D: 200 tons (fl) S: 12 kts Dim: 25.9 × 7.3 × 3.4 Man: 8 tot. M: 2 G.M. 6-71 diesels; 2 Voith-Schneider vertical cycloidal props; 450 hp

Remarks: Built 1965-66. The U.S. Navy's only cycloidal-prop tugs. Both active.

♦ 2 YTM 764-class medium harbor tugs

YTM 768 APOHOLA (ex-YTB 502) (In serv. 1-46) YTM 776 HIAMONEE (ex-YTB 513) (In serv. 11-45)

D: 260 tons (350 fl) S: 11 kts Dim: 30.8 × 8.5 × 3.7

M: 2 Enterprise diesels; 1 prop; 1,270 hp

Man: 8 tot.

YTT 9 N. . . .

REMARKS: Sisters Mimac (YTM 770, ex-YTB 507) stricken 31-12-55; Pocasset (YTM 779, ex-YTB 516) stricken 30-9-85. Survivors in reserve.

Note: A large number of converted LCM(6) landing craft have been converted for use as push-tugs for local use, in place of YTLs.

♦ 0 (+1+1) torpedo trials craft Bldr: . . .

D: 1,030 tons light (1,270 fl) **S**: 11 kts **Dim**: 64.62 (60.35 pp) \times 12.07 \times 3.20

A: 2/533-mm TT (submerged) -3/324-mm Mk 32 ASW TT (III \times 1)

. . .

Electron Equipt: Radar: 1/SPS-64(V)9

M: 2 diesels, electric drive; 2 props; 2,500 hp — 1/350-hp omnidirectional bow-thruster

Range: 1,800/11 Fuel: 85 tons Man: 32 crew + 12 technicians

Electric: 2,500 kw

Remarks: Intended to replace YAG and YFRT currently used for torpedo trials. First unit was in FY 86 Budget as a YFRT but was rejected by Congress; now in FY 87. Will have crane amidships to recover torpedoes and to handle sensor arrays and recovery equipment. Will have batteries to permit quiet operations. Will test Mk 48 ADCAP, Mk 46 and Mk 50 ASW torpedoes.

• 7 YW water barges

| | Bldr | L | In serv. |
|-------|--------------------------------------|------|----------|
| YW 83 | John H. Mathis, Camden, N.J. | 7-43 | 3-44 |
| YW 86 | Zenith Dredge Co., Duluth, Minn. | 4-43 | 8-43 |
| YW 98 | George Lawley & Son, Neponset, Mass. | 9-45 | 11-45 |

| YW 101 | Mare Island NSY, Cal. | 5-44 | 12-44 |
|--------|---------------------------------------|------|-------|
| YW 113 | Marine Iron & SB, Duluth, Minn. | | 1944 |
| YW 126 | Leatham D. Smith, Sturgeon Bay, Wisc. | 1945 | 1945 |
| YW 127 | Leatham D. Smith, Sturgeon Bay, Wisc. | 5-45 | 7-45 |

D: 1,282 tons (fl)
 S: 8 kts
 Dim: 53.0 × 9.7 × 4.6
 Man: 22 tot.
 M: 1 G.M. 8-2784 (YW 86: Fairbanks-Morse) diesel; 1 prop; 560 hp

Remarks: Cargo: 930 tons water. YW 113, 127 active; others in reserve. Same basic design as YO and YOG classes. Sisters YW 123 stricken 15-2-84; YW 108 stricken 15-10-85 (to Kings Pt. Maritime Academy).

6 YWN water barges*

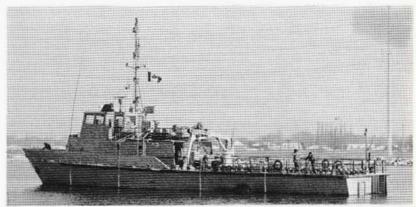
YWN 70, 71, 78, 79, 82, 156

Remarks: Built 1944-45. All but YWN 79 active; 220 tons light (1,270 fl); 50.3 × 10.7 × 2.4. YWN 147 stricken 7-85.

Note: In addition to the above yard and service craft, all of which have hull numbers and are carried on the Navy List, there are more than 3,000 small craft that are listed as property, including ships' boats and such diverse craft as the Naval Academy's large fleet of sailing craft. Among the larger of those listed as property are the two classes of torpedo retrievers and one presidential yacht listed below.

♦ 5 (+3+...) new construction

Bldr: Marinette Marine, Wisc.



New torpedo retriever TWR 823

L. & L. Van Ginderen, 12-85

D: 174 tons (fl) S: 16 kts Dim: $36.58 \times 7.62 \times 3.65$ Range: 1,700/16 Electron Equipt: Radar: 1/LN-66

M: 2 Caterpillar D 399 diesels; 2 props; 2,350 hp Man: 1 officer, 14 men Electric: 128 kw Fuel: 28 tons Endurance: 7 days

Remarks: First five ordered 8-7-83 for delivery 15-12-84 to 15-3-85; three more ordered 10-83, all for delivery 7-85; two ordered 2-85 for delivery 6-86. However, program is far behind schedule, and first not accepted until 11-85; four more accepted 12-85. Stern ramp and electro-hydraulic crane aft. Can carry 14 Mk 48 torpedoes. Have 43.7 tons permanent ballast! Congress halted further procurement, 1985.

◆ 7 modified patrol-boat-design torpedo retrievers Sturgeon Bay, Wisc. (In serv. 1969-70)
Bldr: Peterson Bldrs.,



TWR 3

G. Arra, 8-85

D: 110 tons light (165 fl) S: 18 kts Dim: 31.1 × 6.4 × 2.4 Fuel: 7 tons Electron Equipt: Radar: 1/LN-66

M: 2 G.M. 12V-149 diesels; 2 props; 1,350 hp Range: 1,920/10 Man: 15 tot.
REMARKS: Design based on PGM 59-class patrol boat. Ramp at stern. Stowage for 17

Remarks: Design based on PGM 59-class patrol boat. Ramp at stern. Stowage for 17 tons of recovered ordnance. Given unofficial retriever dog names, list unavailable. There are also a number of 19.8-m torpedo retrievers based on a patrol-craft design; the same design has also been built as an air/sea rescue boat.

Note: Also in use are six 19.8-m torpedo retrievers delivered 10-67 to 11-68 (35 tons, 2 G.M. 12V71 diesels), 17 21.9-m retrievers delivered 1958-66 and displacing 58 tons, and six 25.9-m craft. The 21.9 and 25.9-m units were to be replaced by the new 36.58-m class. See addenda for photos.

Note: As a measure of the number of U.S. Navy craft, as of 1-85, some 383 units were on order: 33/7.32-m Explosive Ordance Disposal Boats, 4/7.32-m Boom-Handling Boats, 6/10.05-m Utility Boats, 5/17.07-m Target Boats, 30/10.05-m Personnel Boats, 52/15.42-m Work Boats, 23/12.9-m Utility Boats, 22/12.19-m Personnel Boats, 12/15.24-m Utility Boats, 102/7.92-m Motor Whale Boats, 15/6.70-m Utility Boats, 64/5.49-m Utility Boats, and 15/5.49-m Target Boats.

♦ 1 presidential yacht Bldr: Mathias Yacht & SB Co., Camden, NJ Sequoia (ex-AG 23) (L: 1925)



Sequoia

U.S. Navy, 1966

D: 105 tons (fl) **S:** 12 kts **Dim:** 31.70 (30.18 pp) \times 5.54 \times 1.37 **M:** 2 diesels; 2 props; 400 hp

Remarks: Wooden-hulled craft purchased from private owner as presidential yacht on 31-3-31. Served as Secretary of the Navy's yacht 3-36 to 1969 when again used as presidential yacht until sold during Carter Administration, 1977. Re-acquired mid-1985 as donation from private owners. Based at Washington, D.C., and listed as a "craft."

MILITARY SEALIFT COMMAND

This organization was founded in 1949 as the Military Sea Transportation Service, and given its current name on 1-8-70. It is headed by a flag officer of the U.S. Navy. Its ships, which are not armed, are considered to be noncommissioned, and are manned by civilians (either government civil servants or contract personnel). They are described below in the order of their hull type numbers. The prefix "T" is appended to the hull numbers of its ships.

In the following pages the government-owned units are listed and described in alphabetical order by ship type. Then chartered ships are described, in particular the ships of the Forward Deployment Logistics Force, the Near-Term Prepositioning Force, and, finally, the other ships on charter for cargo, tanker, scientific support, and fleet services duties.

Note: MSC ships are painted gray (AGOR/AGS: white) and have blue and gold-yellow stack bands. Fleet support replenishment ships operated by MSC began to carry their hull numbers during late 1979; other MSC ships do not display hull numbers.

AMMUNITION SHIP (T-AE)

♦ 1 Kilauea class

Bldr Laid down L In serv.

T-AE 26 Kilauea Gen'l Dynamics, Quincy 10-3-66 9-8-67 10-8-68



Kilauea (T-AE 26)

LSPH E. Pitman, R.A.N., 9-85

D: 17,937 tons (fl) S: 20 kts Dim: 171.9 × 24.7 × 8.5 Electron Equipt: Radar: 1/navigational, 1/SPS-10—TACAN URN-25 M: 1 set G.E. GT; 1 prop; 22,000 hp Man: 121 MSC crew, 67 Navy Boilers: 3 Foster-Wheeler; 42.3 kg/cm², 467°C Fuel: 2,612 tons

Remarks: 8,593 dwt. Transferred to MSC 1-10-80; six sisters remain in Navy. Can carry about 6,500 tons of munitions and has a hangar and flight deck for two UH-46 replenishment helicopters. Can also refuel ships, using forward, starboard station. Navy personnel perform ammunition handling and operate the communications and helicopter. Superstructure filled in on starboard side to increase accommodations space.

STORES SHIPS (T-AF)

• 1 Rigel class

T-AF 58 Rigel Ingalls, Pascagoula 15-3-55 2-9-55



Rigel (T-AF 58)

L. & L. Van Ginderen, 6-83

D: 9,696 tons light (15,540 ft) S: 20 kts Dim: 153.0 × 22.0 × 8.8 Electron Equipt: Radar: 1/SPS-10, 1/Raytheon 1650/CX

M: 1 set G.E. GT; 1 prop; 16,000 hp

Boilers: 2 Combustion Engineering; 42.2 kg/cm², 440°C Range: 11,000/18 Man: 16 officers, 97 men MSC, + 67 Navy

Remarks: 10,781 grt/8,112 dwt. Twelve 10-ton booms. Cargo: 5,975 m³ dry, 5,400 m³ refrigerated. Transferred to MSC 23-6-75 and disarmed. Provides fleet support. Satellite communications equipment carried.

COMBAT STORES SHIPS (T-AFS)

 3 British Lyness-class combat stores ships Wigham Richardson, Wallsend-on-Tyne, U.K.

Bldrs: Swan Hunter &

| | Laid down | L | In serv. |
|--------------------------------|-----------|---------|----------|
| T-AFS 8 Sirius (ex-Lyness) | 4-65 | 7-4-66 | 22-12-66 |
| T-AFS 9 Spica (ex-Tarbatness) | 4-66 | 22-2-67 | 10-8-67 |
| T-AFS 10 SATURN (ex-Stromness) | 10-65 | 16-9-66 | 21-3-67 |



Sirius (T-AFS 8) - with hangar

L. & L. Van Ginderen, 10-85



Spica (T-AFS 9)

Lt. D. Frasier/Lt. jg D. Winkowski, USN, 1983

D: 9,010 tons light (16,792 fl) S: 19 kts Dim: 159.52 (149.35 pp) × 22.0 × 7.77

Electron Equipt: Radar: 1/Kelvin-Hughes 14/9, 1/Kelvin Hughes 14/12 TACAN: T-AFS 8, 10: URN-25

M: 1 Sulzer 8RD76 diesel; 1 prop; 12,700 hp Electric: 3,575 kw

Fuel: 1,310 tons heavy oil, 264 tons diesel

Range: 11,000/19; 27,500/12 Man: 130 MSC, 17 Navy

COMBAT STORES SHIPS (T-AFS) (continued)

Remarks: T-AFS 8 was leased from Great Britain on 12-1-81 for one year for use in the Mediterranean and was to be purchased outright 30-1-82; T-AFS 9, which had been in reserve at Gibraltar, was leased 30-9-81 and was purchased 30-9-82. An agreement to purchase T-AFS 10 was made on 27-1-83, and the ship arrived at Bayonne, New Jersey, 4-83 awaiting purchase under the FY 84 budget, 13-12-83; T-AFS 10 was modernized under FY 85 with improved helicopter facilities, improved communications, five STREAM transfer stations, an automated data facility, and conversion to use U.S. Navy fuel. T-AFS 8 completed a similar upgrading 1-10-83; both can accommodate 2 UH-46 helicopters. 12,358 grt/4,744 nrt. Helicopter deck aft 33.5 × 18.3. Have four holds, with 15 levels, 8 stores elevators. Total cargo volume: 12,234 m³ (8,313 m³ dry stores, 3,921 m³ refrigerated/frozen). Cranes: 1/25-ton, 2/12.5-ton, 1/12-ton, and 2/5-ton. Carry 40,000 different repair parts and can support 15,000 men at sea for one month. Accommodations for 193 total. Very successful, comfortable ships—a useful bargain.

MISCELLANEOUS RESEARCH SHIPS (T-AG)

♦ 1 sound trials ship (SCB 762 type) Bldr: Todd SY, Seattle

Laid down L In serv.
T-AG 195 HAYES (ex-T-AGOR 16) 12-11-69 2-7-70 21-7-71



Hayes (T-AG 195) - before conversion

L. & L. Van Ginderen, 6-83

D: 3,860 tons (fl) S: 12 kts Dim: 75.10 (67.06 pp) \times 22.86 \times 6.70 Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/125 Sonar: TUMS towed sound-measurement array

M: . . . diesels, electric drive; 2 props; . . . hp
Endurance: 30 days Range: 6,000/12 Man: 10 officers, 26 men, MSC crew + 29 technicians

Remarks: Catamaran, with each hull of 7.3 m. Being converted as sound trials vessel under FY 86 Budget to replace *Monob One* (YAG 61), with completion scheduled for 1989. Will transport, deploy, and retrieve acoustic arrays in support of the Submarine Noise Reduction Program. Will be reengined, with original 4 high-speed diesels driving controllable-pitch props being replaced by a diesel-electric plant. Had been laid up since 1982 and was transferred from the Oceanographer of the Navy to the David Taylor Naval Ships Research and Development Center's control in 1983 awaiting the FY 86 conversion. Was not a success as a research platform, suffering from excessive pitching.

♦ 1 Vanguard class Bldr: Marine Ship Corp., Sausalito, Cal.

T-AG 194 VANGUARD (ex-T-AGM 19, ex-Muscle Shoals, ex-Mission San Fernando, T-AO 122)



Vanguard (T-AG 194)

L. & L. Van Ginderen, 2-84

D: 21,478 tons (fl) S: 16 kts Dim: 181.4 × 22.9 × 7.6 Electron Equipt: Radar: 1/Raytheon 1650/9X, 1/Raytheon 1660/12S M: 1 set G.E. GT, electric drive; 1 prop; 8,700 hp Boilers: 2 Babcock & Wilcox "D"; 42.3 kg/cm², 440 °C Range: 27,000 n.m./16 Fuel: 3,995 tons Man: 19 officers/179 men Remarks: 16,060 grt/16,255 dwt.; Vanguard was converted 1964-66 from a T2-SE-A2-type tanker to a tracking and communications ship to support NASA manned space flights. Reclassified 30-9-80 as T-AG 194 while under conversion to replace Compass Island (AG 153) as ballistic-missile submarine navigational system trials ship for the Navy Strategic Systems Project Office. Conversion commenced the 4-80 at Todd Shipyard, San Pedro, Cal. Appearance similar to Redstone (T-AGM 20) but without tracking radars. Has a MARISAT satellite communications facility. Trials with a ring-laser gyro for navigation began 4-85.

Note: The experimental auxiliary Kingsport (T-AG 164; ex-Kingsport Victory, AK 239) was deactivated 5-84 and approved for disposal late in 1985.

RANGE INSTRUMENTATION SHIPS (T-AGM)

♦ 1 Mariner class

T-AGM 23 OBSERVATION ISLAND (ex-AG 154, ex-YAG 53, ex-Empire State Mariner)

Bldr L In serv.
New York SB, 15-8-53 5-12-53
Camden, N.J.



Observation Island (T-AGM 23)

MSC, 9-85

D: 16,076 tons (fl) **S:** 20 kts **Dim:** 171.6 × 23.27 × 9.1

Electron Equipt: Radar: 1/Raytheon 1650/9X, 1/Raytheon 1660/12S, 1/SPQ-11 M: 1 set G.E. GT; 1 prop; 22,000 hp

Boilers: 2 Combustion Engineering, 42.3 kg/cm², 467°C

Fuel: 2,652 tons Range: 17,000,13 Man: 78 civilians + 60-65 technicians

Remarks: Former ballistic-missile trials ship. Acquired by the Navy on 10-9-56; used for Polaris and Poseidon missile trials until placed in reserve on 29-9-72. Reclassified T-AGM 23 on 1-5-79. Converted between 7-79 and 4-81 to carry Cobra Judy (SPQ-11) missile-tracking, phased-array radar aft. Two large parabolic collection antennas in geodesic radomes atop bridge. Operated for the U.S. Air Force in the Pacific. Painted white. Refitted 1-84 to 8-84 by Northwest Marine, Portland, Ore., with a new foremast, heightened stacks, 3 new turbogenerator sets, new deckhouses, 2 new evaporators, and upgraded electronics (including adding an X-band tracking radar).

 1 converted Haskell-class attack transport Richmond, Cal. Bldr: Permanente Metals,

In serv.

20-9-44

T-AGM 22 RANGE SENTINEL (ex-Sherburne, APA 205) 10-7-44



Range Sentinel (T-AGM 22)

MSC, 1979

D: 11,860 tons (fl) S: 15.5 kts Dim: $138.7 \times 18.9 \times 8.8$ Electron Equipt: Radar: 1/Raytheon TM 1650/9X, 1/Raytheon TM 1660/12S, 1/SPQ-7, 3/other tracking

M: 1 set GT; 1 prop; 8,500 hp

RANGE INSTRUMENTATION SHIPS (continued)

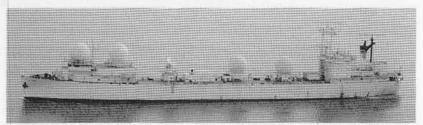
Boilers: 2 Combustion Engineering, 37 kg/cm², 399°C Fuel: 1,197 tons Range: 10,000/15.5 Man: 14 officers, 54 men, 27 technicians

REMARKS: 8,306 grt/5,301 dwt. Converted between 10-69 and 14-10-71 as support ship for the Poseidon (and later, Trident) program. Reclassified T-AGM 22 on 14-10-71. VC2-S-AP 5 Victory-type hull and propulsion. Operates from Port Canaveral, Florida, for the Atlantic Test Range.

♦ 1 Vanguard class Bldr: Marine Ship, Sausalito, Cal.

T-AGM 20 REDSTONE (ex-Johnstown, ex-Mission de Pala, AO 114)

In serv.
22-4-44



Redstone (T-AGM 20)

MSC, 1983

D: 16,800 tons light (24,700 fl) S: 16 kts Dim: 181.4 × 22.9 × 7.6 Electron Equipt: Radar: 1/Raytheon 1650/9X, 1/Raytheon 1660/12S

M: 1 set G.E. GT, electric drive; 1 prop; 8,700 hp Boilers: 2 Babcock & Wilcox "D," 42.3 kg/cm², 440°C

Fuel: 3,995 tons Range: 27,000/16 Man: 19 officers, 71 men, 108 technicians

Remarks: 16,060 grt/16,255 dwt. Former T2-SE-A2-type tanker converted 1964-66 to serve as tracking and communications ship for NASA manned space flights; 22 meters added amidships. Sister *Mercury* (T-AGM 21) stricken in 1969 after very little use, and sister *Vanguard* (T-AGM 19) redesignated T-AG in 1980. Two tracking radars, two large communications dish antennas, now all mounted in geodesic plastic radomes.

Note: General H. H. Arnold (T-AGM 9) was stricken and placed in the Maritime Commission National Defense Reserve Fleet on 23-2-82 and sold for scrap 25-10-82. Sister General Hoyt S. Vandenberg (T-AGM 10) was transferred to the MARAD NDRF on 8-2-83 and remains in storage in the James River in Virginia.

OCEANOGRAPHIC RESEARCH SHIPS (T-AGOR)

Note: All naval-owned oceanographic research ships are listed here, for convenience sake; those without "T" before their hull numbers are operated by private organizations, generally on naval-related research programs. A new oceanographic ship for transfer to an academic agency is included in the FY 87 Budget request.

♦ 2 Gyre class (SCB 734 type) Bldr: Halter Marine, New Orleans

| | Laid down | L | In serv. |
|--------------------|-----------|---------|----------|
| AGOR 21 Gyre | 9-10-72 | 7-6-73 | 14-11-78 |
| AGOR 22 MOANA WAVE | 9-10-72 | 23-6-73 | 16-1-74 |



Moana Wave (AGOR 22) - prior to lengthening

L. & L. Van Ginderen, 1984

D: 950 tons (1,190 fl) S: 12.5 kts Dim: 53.14 × 11.05 × 3.05

M: 2 Caterpillar diesels; 2 CP props; 1,700 hp (plus 170-hp retractable maneuvering prop)

Range: 8,000/. . . Endurance: 40 days

Man: 10 crew plus 19 scientists (AGOR 22: 15 crew plus 13 scientists)

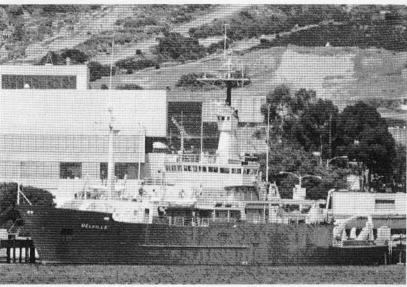
REMARKS: On completion, assigned to Texas A&M University and University of Hawaii, respectively. Modified oil-field supply ships using modular equipment vans on

long, open fantail. AGOR 22 has conducted trials 1979-84 with the satellite communications and towed passive sonar equipment for the T-AGOS program, under contract to the Naval Electronics Command (NAVELEX); the SATCOMM antenna was mounted on a platform between the ship's paired stacks. In 1984-85, the ship was lengthened to 62.24 by Halter Marine at Mobile, Ala., and given a lengthened permanent deckhouse laboratory aft, plus facilities for two portable lab modules.

♦ 2 Melville class (SCB 710 type)

Bldr: Defoe SB, Bay City, Mich.

AGOR 14 Melville 12-7-67 10-7-68 27-8-69 AGOR 15 KNORR 9-8-67 21-8-68 14-1-70



Melville (AGOR 14) - blue hull, white superstructure L. & L. Van Ginderen, 5-82

D: 1,915 tons (2,080 fl) S: 12.5 kts Dim: 74.7 (67.0 pp) \times 14.1 \times 4.6 M: 2 Enterprise diesels; Voith-Schneider cycloidal props; 2,500 hp Range: 10,000/12 Man: 9 officers, 16 men, 25 researchers

Remarks: Operated for the Office of Naval Research, AGOR 14 by Scripps Institute, AGOR 15 by Woods Hole Oceanographic Institution. One vertical cycloidal propeller forward, larger unit aft; intended for precise maneuvering but, because mechanical rather than electric drive was used, have proven troublesome. AGOR 19 and AGOR 20 of this class were therefore canceled. AGOR 15 located the wreck of RMS *Titanic* on 1-9-85, using a new remote-controlled submersible.

♦ 6 Robert D. Conrad class (SCB 185 and 710* types)

| | Bldr | L | In serv. |
|---------------------------|-----------------------|---------|----------|
| AGOR 3 ROBERT D. CONRAD | Gibbs, Jacksonville | 26-5-62 | 29-11-62 |
| T-AGOR 7 Lynch | Marinette, Wisc. | 17-3-65 | 27-3-65 |
| AGOR 9 THOMAS G. THOMPSON | Marinette, Wisc. | 18-7-64 | 24-8-65 |
| AGOR 10 THOMAS WASHINGTON | Marinette, Wisc. | 1-8-64 | 27-9-65 |
| T-AGOR 12 DE STEIGUER* | N.W. Marine, Portland | 3-6-66 | 28-2-69 |
| T-AGOR 13 BARTLETT* | N.W. Marine, Portland | 24-5-66 | 31-3-69 |

D: 1,088 tons light (1,410 fl) **S:** 13.5 kts **Dim:** $63.7 (59.7 \text{ pp}) \times 11.4 \times 4.9 (6.3 \text{ m max.})$

Electron Equipt: Radar: MSC units: 1/Raytheon 1650/SX, 1/Raytheon 1660/12S

M: 2 Caterpillar D-378 (T-AGOR 7-13: Cummins) diesels, electric drive; 1 prop; 1,000 hp

Electric: 850 kw Fuel: 211 tons

Range: 9,000/12 Man: 11 officers, 17 men, 15 researchers



Lynch (T-AGOR 7) - MARISAT radome added

L. & L. Van Ginderen, 8-84

OCEANOGRAPHIC RESEARCH SHIPS (continued)



Thomas Washington (AGOR 10)—long forecastle, less superstructure (number no longer carried) 1965

Remarks: All civilian crews; 3 under Navy control, 3 under MSC. Assigned: AGOR 3: Lamont Geophysical Lab., Columbia U.; T-AGOR 7: MSC for Oceanographer of the Navy; AGOR 9: U. of Washington for Navy; AGOR 10: Scripps Inst. Of Oceanography; T-AGOR 12 and T-AGOR 13: MSC for Oceanographer of the Navy. Vary in details and paint (see photos). Sands (T-AGOR 6) on loan to Brazil: Charles H. Davis (T-AGOR 5) to New Zealand; James M. Gillis (AGOR 4), in reserve since 18-3-81, was leased to Mexico 15-6-83. Large stack contains 620-hp gas-turbine generator set used to drive main shaft at speed up to 6.5 kts for experiments requiring "quiet" conditions. Also have retractable electric bow-thruster/propulsor, which provides up to 4.5 kts. AGOR 3 has a wide aperture array, multi-channel seismic system. AGOR 10 carries the Sea Beam bottom contour mapping system. AGOR 3, 9, and 10 were modernized 1981-84 with new oceanographic winches and cables to work to 4-5,000-m depths.

♦ 2 Eltanin class Bldr: Avondale Marine, New Orleans, La.

| | L | In serv. |
|-----------------------------------|---------|----------|
| AGOR 8 ELTANIN (ex-Islas Orcadas, | | 7-3-58 |
| Q9, ex-Eltanin, T-AGOR 8) | | |
| T-AGOR 11 MIZAR (ex-T-AK 272) | 7-10-57 | 22-11-57 |



Mizar (T-AGOR 11)—new superstructure amidships, foremast struck
G. Arra, 1982

D: 2,040 tons light (3,750 ft) S: 13 kts Dim: 81.1 × 15.8 × 6.9
Electron Equipt: Radar: T-AGOR 11: Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S

M: 4 Alco diesels, Westinghouse motors; 2 props; 3,200 hp Fuel: 675 tons Range: 14,000/12 Man: 11 officers, 30 men, 15 technicians

Remarks: 2,486 grt/1,850 dwt. Former sisters to Mirfak (T-AK 271). Reclassified AGOR on 15-4-64. T-AGOR 11 operates for the Naval Electronics Command. Ice-breaker hull; covered well on centerline for lowering equipment. AGOR 8 loaned to Argentina in 12-73 as Islas Orcadas, returned 1-8-79 and laid up at Norfolk Virginia.

Note: Also owned by the U.S. Navy but operated by civilian research organizations are the following small units: *Hoh* and *Onar*, operated by the University of Washington; *Edgerton*, operated by the Massachusetts Institute of Technology; a 16-m former buoy tender operated by the Massachusetts Maritime Academy; a 20-meter workboat operated by the University of Rhode Island; and an LCM(6)-class landing craft, operated by the University of Florida. YP 655, operated by the U.S. Naval Academy, is also equipped for oceanographic research.

OCEAN SURVEILLANCE SHIPS (T-AGOS)

| ♦ 0 (+1 + 9) SWATH T-AGOS Bldr: | | 0 (+1) | +9) | SWATH T | -AGOS | Bldr: | |
|---------------------------------|--|--------|-----|---------|-------|-------|--|
|---------------------------------|--|--------|-----|---------|-------|-------|--|

| | Laid down | L | In serv |
|-------------|-----------|---|---------|
| T-AGOS 17 N | | | |
| T-AGOS 21 N | | | |
| T-AGOS 22 N | | | |
| T-AGOS 23 N | | | |

Authorized: T-AGOS 17 in FY 87. Programmed: T-AGOS 21-23 in FY 88, 2/yr in FY 89, 90, 91

D: 3,300-4,300 tons (fl) S: . . . Dim: . . . × . . . × . . . Electron Equipt: Radar: 2/. . . nav.—Sonar: UQQ-2 SURTASS M: Diesels; 2 props; . . . hp Range: . . . Man: . . .

Remarks: First SWATH (Small Waterplane Twin-Hull) T-AGOS requested FY 86 for operational capability by 1990-91. Design provides excellent stability in heavy seas—a necessity in higher latitudes. Design not fixed by early 1986.

♦ 7 (+12) Stalwart class Bldr: T-AGOS 1-12: Tacoma Boat, Tacoma, Wash.; 13-14: Halter Marine, Moss Point, Miss.

| | Laid down | L | In serv. |
|------------------------------------|-----------|----------|----------|
| T-AGOS 1 STALWART | 3-11-82 | 11-7-83 | 9-4-84 |
| T-AGOS 2 CONTENDER | 1-10-82 | 20-12-83 | 29-7-84 |
| T-AGOS 3 VINDICATOR | 14-4-83 | 1-6-84 | 20-11-84 |
| T-AGOS 4 TRIUMPH | 3-1-84 | 7-9-84 | 19-2-85 |
| T-AGOS 5 Assurance | 31-5-84 | 20 | 1-5-85 |
| T-AGOS 6 Persistent | 28-9-84 | 6-4-85 | 14-8-85 |
| T-AGOS 7 INDOMITABLE | 30-11-84 | 16-7-85 | 2-12-85 |
| T-AGOS 8 PREVAIL | 13-3-85 | 7-12-85 | 3-86 |
| T-AGOS 9 Assertive | 30-7-85 | | |
| T-AGOS 10 Invincible | 8-11-85 | | |
| T-AGOS 11 AUDACIOUS (ex-Dauntless) | | | |
| T-AGOS 12 Bold (ex-Vigorous) | | | |
| T-AGOS 13 ADVENTUROUS | 19-12-85 | | 1988 |
| T-AGOS 14 WORTHY | 2-86 | | 1988 |
| T-AGOS 15 N | 4.40 | | |
| T-AGOS 16 N | | | |
| T-AGOS 18 N | | | |
| T-AGOS 19 N | | | |
| T-AGOS 20 N | | | |

Authorized: T-AGOS 1 and 2 in FY 79, T-AGOS 3 in FY 80, T-AGOS 4-8 in FY 81, T-AGOS 9-12 in FY 82, T-AGOS 13, 14 in FY 85, T-AGOS 15, 16 in FY 86; Programmed: T-AGOS 18, 19, 20 in FY 87



Vindicator (T-AGOS 3)

MSC 1985



Stalwart (T-AGOS 1)

L. & L. Van Ginderen, 10-85

D: 1,600 tons light (2,285 fl)
S: 11 kts
Dim: 68.28 (62.1 wl) × 13.10 × 4.57
Electron Equipt: Radar: 2/navigational—Sonar: UQQ-2 SURTASS
M: 4 Caterpillar-Kato D-348B 800-hp diesels, G.E. electric drive; 2/4-bladed props; 2,200 hp (1,600 hp sust.)—550-hp bow-thruster

Electric: 1,500 kVA Range: 3,000/11 plus 6,480/3 Endurance: 98 days Man: 8 officers, 11 men contract crew, 7 RCA technicians

Remarks: The first three T-AGOS were contracted for 26-9-80. AN/UQQ-2 SURTASS (SURveillance Towed Array Sensor) is an 1,829-m linear, hydrophone array deployed over the ship's stern in a flexible, neutrally buoyant cable; the output from the SURTASS will be instantaneously relayed to shore monitoring stations via WSC-6 satellite communications, and the on-board technicians are primarily for maintenance and backup. Main-engine motor/generator sets also supply ship's-service power; there is a 250-kw emergency generator. Will have passive roll stabilization. Intended to conduct

OCEAN SURVEILLANCE SHIPS (continued)

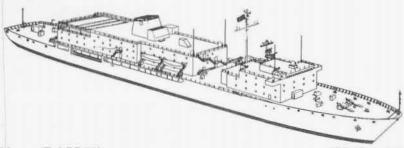
60-90-day patrols and to be at sea 292 days per year. T-AGOS 13 and later have 3 more berths and more space per man; T-AGOS 13, 14 ordered 4-6-85, with option to build through T-AGOS 18.

First 12 to be operated under 1-2-85 contract with Sea Mobility Div., Falcon Contractors; contract duration 4 years, 8 months, with six to base on each coast at Pearl Harbor and Little Creek, Va. Technicians supplied by RCA on contract. Tacoma Boat's bankruptcy late 1985 will further delay an already much-delayed program; work ceased 14-2-86 on unlaunched T-AGOS 9-12.

SURVEYING SHIPS (T-AGS)

Bldr: Bethlehem SY, Sparrows, Point, Maryland ♦ 0 (+2) Maury class

Laid down L In serv. 28-12-87 T-AGS 39 MAURY T-AGS 40 TANNER 28-4-88



Maury (T-AGS 39)

U.S. Navy, 6-85

D: 8,810 tons light (15,821 fl) S: 21 kts

Dim: 152.35 (140.84 pp; 145.09 wl) × 21.95 × 9.30

Electron Equipt: Radar: 2/. . . nav.—Sonar: SQN-17 M: 2 Transamerica Delaual R5-V16 Enterprise diesels; 1 CP prop; 25,000 hp

Range: 17,800/20 Fuel: 3,200 tons

Electric: . . . Man: 56 MSC crew; 3 naval officers, 29 naval men, 20 scientists

Remarks: Ordered 28-6-85 under FY 85 funding. Replaced a program to convert two C3-S-33a cargo ships (Lake and Scan) from the Navy/Marad Ready Reserve Force. Intended as replacements for Bowditch (T-AGS 21) and Dutton (T-AGS 22) in support of SSBN operations through sea-floor charting and gravimetric mapping. Hull volume largely voids except for engineering spaces. Will carry up to 7,339 tons of water ballast. SQN-17 BOTOSS (BOttom TOpography Survey System) will map to depths

♦ 1 converted cargo ship (C4-SA type)

Bldr: National Steel, San Diego, Cal.

In serv. T-AGS 38 H.H. Hess (ex-Canada Mail) 3-65



H.H. Hess (T-AGS 38)

MSC, 1982

D: 13,520 tons light (21,250 fl) S: 21 kts

Dim: 171.8 (160.93 pp) \times 23.16 \times 9.6

Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S

M: 1 set G.E. GT; 1 prop; 19,250 hp Electric: 1,400 kw

Boilers: 2 Foster-Wheeler, 43.3 kg/cm², 457°C

Fuel: 3,178 tons Range: 14,000/20 Man: 30 MSC crew, 74 Navy

Remarks: Mariner-type passenger-cargo ship acquired from the Maritime Administration on 9-7-76 for conversion to replace the Michelson (T-AGS 23) in the SSBN navigational support program. Retains original six cargo holds, but most cargo booms removed. Converted at National Steel and SB, San Diego, 3-77 to 1-78.

 ◆ 2 Chauvenet class (SCB 723 type) Bldr: Upper Clyde SB, Glasgow, U.K.

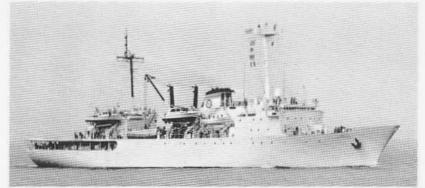
Laid down L In serv. T-AGS 29 CHAUVENET 13-5-68 13-11-70 24-5-67 T-AGS 32 HARKNESS 30-6-67 12-6-68 29-1-71

D: 3,040 tons (4,330 fl) S: 15 kts Dim: 119.8 (101.8 pp) × 16.5 × 4.9

Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S

M: 2 Alco diesels, Westinghouse motor; 1 CP prop; 3,600 hp

Electric: 1,500 kw Endurance: 90 days Fuel: 824 tons Range: 15,000/12 Man: MSC: 13 officers, 56 men + Navy: 6 officers, 49 men + 12 civilian scientists



Harkness (T-AGS 32)

G. Arra, 1983

Remarks: 2,890 grt/1,030 dwt. Very complete navigation and communications systems. Can carry four small survey launches; hangar and flight deck for two helicopters. Operated for the Oceanographer of the Navy; 61-76 naval personnel aboard in 1985.

4 Silas Bent class (SCB 226, 725*, and 728† types)

| | Bldr | L | In serv. |
|---------------------|------------------------|----------|----------|
| T-AGS 26 SILAS BENT | American SB, Lorain | 16-5-64 | 23-7-65 |
| T-AGS 27 KANE | Christy, Sturgeon Bay | 20-11-65 | 19-5-67 |
| T-AGS 33 WILKES* | Defoe, Bay City, Mich. | 31-7-69 | 28-6-71 |
| T-AGS 34 WYMANT | Defoe, Bay City, Mich. | 30-10-69 | 3-11-71 |



Silas Bent (T-AGS 26)

G. Arra, 10-85

D: 1,790 to 1,935 tons (2,420 to 2,596 fl) S: 15 kts

Dim: 86.9 (80.8 pp) \times 14.6 \times 4.6

Electron Equipt: Radar: 1/Raytheon RM 1650/9X, 1/Raytheon TM 1660/12S M: 2 Alco diesels, Westinghouse or G.E. motor; 1 CP prop; 3,600 hp (plus 350-hp bow-thruster)

Electric: 960 kw Fuel: 461 tons Range: 14,000/15

Man: 12 officers, 35 men, 30 scientists

Remarks: Operated for Oceanographer of the Navy. T-AGS 34, used in support of the strategic missile programs, is equipped with the Sperry SQN-17 BOTOSS (BOttom TOpography Survey System) for mapping depths to 7,300 m; the system consists of two planar transducer arrays and an HP 2100 computer, which averages the results of four separate passes through an area. Have MARISAT satellite communications equipment.

* 2 Bowditch class

Bldr: Oregon SB, Portland, South Coast Co.

Conv. 8-10-48 30-6-45 T-AGS 21 BOWDITCH (ex-South Bend Victory) 8-5-45 30-9-58 T-AGS 22 DUTTON (ex-Tuskegee Victory)



Bowditch (T-AGS 21)

L. & L. Van Ginderen, 6-84

D: 4,700 tons light (13,050 fl) S: 16.5 kts

Dim: 138.76 (133.05 pp) × 18.98 × 7.62

Electron Equipt: Radar: 1/Raytheon TM 1650/9X, 1/Raytheon TM 1660/12S

M: 1 set GT; 1 prop; 8,500 hp

Boilers: 2 Combustion Engineering; 37 kg/cm², 399°C

Electric: 1,260 kw Fuel: 2,824 tons Range: 20,000/16.5 Man: 14 officers, 47 men, 15 scientists

SURVEYING SHIPS (continued)

Remarks: 7,783 grt/8,350 dwt. Victory-class cargo ships converted to support the SSBN program. Used for sea-floor charting and magnetic mapping. Sister Michelson (T-AGS 23) stricken in 1975. To be replaced by T-AGS 39 and 40.

HOSPITAL SHIPS (T-AH)

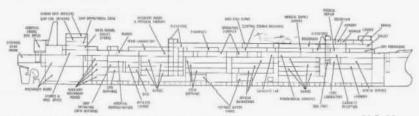
♦ 0 (+2) converted San Clemente-class merchant tankers Bldr: National Steel, San Diago, Cal.

Conv. start In serv. 7-86 T-AH 19 MERCY (ex-Worth) 1976 20-7-84 12-86 T-AH 20 COMFORT (ex-Rose City) 1976 2-4-85



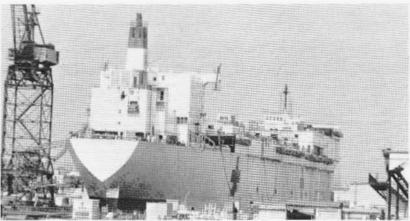
Mercy (T-AH 19)

U.S. Navy



Mercy (T-AH 19) - interval arrangements

U.S. Navy



Mercy (T-AH 19) - under conversion

W. Donko, 7-85

D: 24,712 tons light (69,320 fl) S: 17.5 kts Dim: 272.49 (260.61 pp) × 32.23 × 9.98 Electron Equipt: Radar: 2/. . . nav. M: 1 set steam turbines; 1 prop; 24,500 hp Boilers: 2/. . . Fuel: 5,747 tons Range: 13,420/17.5

Man: 14 officers, 154 men MSC, 1,207 Navy staff + 1,000 patients

REMARKS: Builder contracted 29-6-83 to convert Apex Marine's tanker Worth to a hospital ship with FY 83 funds; T-AH 20's conversion ordered from same yard 16-12-83 with FY 84 funds. Were originally 44,875 grt/91,849 dwt.

The entire midships area has been altered to provide a large helicopter deck, accommodations, and boat stowage. Have 12 operating rooms, 4 X-ray rooms, an 80-bed intensive-care unit, a burn-care facility, and a 50-bed reception/triage area. Of the 1,508 accommodations for naval personnel, there will be 259 officers, 31 chief petty officers, and 530 enlisted, augmented in emergencies by 372 naval medical support personnel; also aboard will be 14 communications specialists. One will be kept on each U.S. coast, on 5-days' steaming notice, and they will be used about 7 days per year on exercises. In port, they will be maintained by the MSC crew and a small civilian contract crew. Fresh water tankage for 1,525 tons will be carried, plus two 278-ton/day distilling plants. Much of the displacement will be sea-water ballast.

CARGO SHIPS (T-AK)

◆ 1 Northern Light class (C2-S-33a type) Bldr: Sun SB & DD Co., Chester,

In USN In serv. T-AK 286 Vega (ex-Bay, ex-Mormacbay) 14-10-60 15-10-81

D: 16,363 tons (fl) S: 19 kts Dim: 148.15 (139.59 pp) × 20.72 × 8.68 Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S M: 1 set G.E. GT; 1 prop; 11,000 hp (15,700 emergency) Electric: 1,275 kw Boilers: 2 Combustion Engineering 43.3 kg/cm², 457°C Fuel: 3,056 tons Range: 14,000/18 Man: 68 MSC crew plus 7 naval



Vega (T-AK 286)

G. Arra, 8-85

REMARKS: T-AK 286 (originally to have been renamed King's Bay) acquired 29-4-81 and placed on the Navy List on 15-10-81, recommissioned 18-3-83 after being converted to transport 16 Trident ballistic missiles in vertical cells in place of No. 3 hold. Former 9,260 grt/12,500 dwt cargo ship acquired from Maritime Administration's National Defense Reserve Fleet.

Sisters Northern Light (T-AK 284, ex-Cove, ex-Mormaccove) and Southern Cross (T-AK 285, ex-Trade, ex-Mormactrade) were deactivated 9-84 and 12-84, respectively, and transferred to the Maritime Administration-administered Ready Reserve Force, although remaining as Navy property. Both were configured as general cargo ships. Funds were requested in FY 85 to convert sister Cape as a ballistic-missile transport (T-AK 295) but were denied by Congress; Cape and sisters Lake and Scan (which were to have been converted as survey ships T-AGS 39 and 40) are also in the Ready Reserve Force.

Note: Former attack cargo ship Wyandot (T-AK 283, ex-AKA 92), in reserve since 5-3-76, was stricken 31-1-86, as was the Alchiba-class heavy-lift cargo ship Marine Fiddler (T-AK 267), also long in reserve.

2 Norwalk class

Bldr: Oregon SB, Portland (T-AK 281: Permanente, Richmond, Calif.)

Conv. 18-5-45 7-10-64 T-AK 280 FURMAN (ex-Furman Victory) 28-5-70 T-AK 282 Marshfield (ex-Marshfield Victory) 15-5-44



Marshfield (T-AK 282)

G. Arra, 1984

D: 6,700 tons light (11,150 fl) S: 16.5 kts Dim: 138.76 (133.05 pp) × 18.90 × 7.32

Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon 1660/12S

M: 1 set GT; 1 prop; 8,500 hp Boilers: 2; 37 kg/cm², 399°C

Fuel: 2,824 tons Range: 20,000/16.5

Man: T-AK 280: 35 tot. MSC; T-AK 282: 14 officers, 57 men MSC, plus 7 Navy

Remarks: 7,491 grt/9,649 dwt. In T-AK 282, hold No. 3 accommodates 16 vertically stowed Poseidon or Polaris SLBMs to support SSBN activities. Has MARISAT SATCOMM system. Carries torpedoes, submarine spares, etc.; also carries 18,000 barrels cargo fuel (7,566 bbl diesel/10,434 bbl fuel oil). 40-ton cargo booms. Small Navy security detachment aboard. T-AK 280, originally converted like T-AK 282, was to have been stricken 20-9-81, but was instead reserved for conversion to a cable transporter for the Naval Electronics Command. Contracted to Atlantic Drydock Co., Jacksonville, Fla., on 17-11-82, the ship had all winches and cargo booms removed, as well as the refrigeration equipment deleted; completed 20-4-83, she now has a crew of only 35.

Sister Norwalk (T-AK 279) was stricken 1-8-79 and Victoria (T-AK 281) was transferred to the Maritime Commission for long-term layup on 18-1-84; stricken

31-1-86.

CARGO SHIPS (continued)

♦ 1 Eltanin-class Arctic service

Bldr L In serv.
T-AK 271 Mirfak Avondale Marine, New Orleans, La. 5-8-57 30-12-57



Mirfak - while active

U.S. Navy, 1970

D: 2,022 tons light (4,800 fl) S: 13 kts Dim: $81.1 \times 15.8 \times 7.0$ Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S M: 4 Alco diesels, Westinghouse electric drive; 2 props; 2,700 hp Fuel: 612 tons Range: 14,000/13 Man: 48 tot.

Remarks: 2,486 grt/1,850 dwt. Maritime Administration C1-ME2-13a Type, intended for Arctic operations and having an icebreaker hull form. Cargo: 2,634 m³ dry/227 m³ refrigerated. Deactivated 11-12-79 and transferred to the Maritime Administration; remains Navy property and is laid up in the James River, in Virginia. Sisters Eltanin (AGOR 8, ex-AK 270) and Mizar (T-AGOR 11) were converted to serve as oceanographic research ships.

Note: In addition to the above-listed Navy-owned ships, the Military Sealift Command charters a number of general cargo ships, both for the Near-Term Prepositioning Force and for general cargo transport. The ships on charter as of late 1985 are listed at the end of this section with other chartered units. The Reagan Administration is also attempting to enlarge the pool of cargo ships readily available for national emergencies by rehabilitating suitable vessels in the Maritime Commission National Defense Reserve Fleet; these ships are to be activatable in 5 or 10 days and are identified as part of the Ready Reserve Force (RRF), ultimately to include some 116 ships. On 11-10-85 there were 59 cargo ships and 7 tankers in the RRF.

VEHICLE CARGO SHIPS (T-AKR)

• 7 (+1) SL-7-class container cargo ships

| | Bldr | In serv. | In Navy | AKR conv. |
|---|-------------------------------------|----------|----------|--------------|
| T-AKR 287 ALGOL (ex-Sea- Land Exchange) | Rotterdamse DDM, Rotterdam | 5-73 | 13-10-81 | 19-6-84 |
| T-AKR 288 BELLATRIX (ex- Sea-Land Trade) | Rheinstahl Nord- seewerke, Emden | 12-73 | 13-10-81 | 10-9-84 |
| T-AKR 289 DENEBOLA (ex- Sea-Land Resource) | Rotterdamse DDM, Rotterdam | 12-73 | 27-10-81 | 10-85 |
| T-AKR 290 Pollux (ex- Sea-Land Market) | A.G. Weser, Bremen | 9-73 | 16-11-81 | 3-86 |
| T-AKR 291 ALTAIR (ex- Sea-Land Finance) | Rheinstahl Nord- seewerke, Emden | 9-73 | 5-1-82 | 13-11-85 |
| T-AKR 292 Regulus (ex- Sea-Land Commerce) | A.G. Weser, Bremen | 3-73 | 27-10-81 | 28-8-85 |
| T-AKR 293 CAPELLA (ex- Sea-Land McLean) | Rotterdamse DDM, Rotterdam | 10-72 | 16-4-82 | 1-7-84 |
| T-AKR 294 ANTARES (ex- Sea-Land Galloway) | A.G. Weser, Bremen | 9-72 | 16-4-82 | 12-7-84 |

D: 55,355 tons (fl) S: 33 kts Dim: 288.38 (268.37 pp) × 32.16 × 11.13 M: 2 sets G.E. MST-19 GT; 2 props; 120,000 hp Electric: 7,500 kw Boilers: 2 Foster-Wheeler; 61.6 kg/cm², 507°C Fuel: 8,500 tons Range: 7,000/23 Man: 62 max.

REMARKS: 48,525 grt/24,270 dwt (varies). Six acquired under FY 81 and two under FY 82, with the original intent of extensively converting them to serve as T-AKR, "Roll-on/Roll-off" vehicle cargo ships for the Rapid Deployment Force. Instead, under FY 82 Congress mandated that four be given a "partial" Ro/Ro conversion and the other



Algol (T-AKR 287)

L. & L. Van Ginderen, 9-84



Antares (T-AKR 294)

L. & L. Van Ginderen, 1-86



Capella (T-AKR 293)

MSC, 7-84

four be given only a "mini-modification." This has since been changed to give all the same modification, T-AKR 287, 288, 293, and 294 under FY 82 and the others under FY 84. The conversions were performed by: T-AKR 287, 288, 292: National Steel, San Diego; T-AKR 289 and 293: Pennsylvania SB, Chester, Pa.; and the others by Avondale SY, Westwego, La. The ships were given T-AK hull numbers when purchased; these were changed to T-AKR without changing the actual numbers assigned, first two on 10-9-82, others on 1-11-83.

The ships were originally tailored to transport up to 1,086 nonstandard 35-ft. containers (standard cargo containers are either 20 or 40 feet in length); 4,000 containers were purchased along with the first six ships. These ships proved expensive to operate for the former merchant owner, and their sophisticated propulsion plants have not been overly reliable. Up to 9,484 tons of salt-water ballast can be carried.

On completion three are to be maintained crewed, ready for sea on each coast, with the other two to be placed on 5 days' notice in the Ready Reserve Force. Conversion entailed filling in the amidships portion to produce a multi-deck vehicle cargo area and helicopter hangar totaling 12,170 m² on 5 decks (can accommodate up to 120 UH-1 helicopters or 183 M-1 tanks). This is topped by a flight deck of 3,252 m² with a twin 35-ton crane plumbing two hatches interrupting the forward half. The stern provides 1,719 m² of vehicle parking, as well as cargo space for 8 "Seashed" containerized vehicle stowage or 46/20-ft. containers; it is served by a twin 50-ton crane. There are vehicle access ramps amidships, port and starboard. Operated on contract by original owners, SeaLand Service, Inc.

♦ 2 Maine (C7-S-95a-type) class

Bldr: Bath Iron Wks., Maine

T-AKR 10 Mercury (ex-Illinois, ex-Arizona)

T-AKR 11 JUPITER (ex-Lipscomb Lykes, ex-Arizona)

L In serv.
1977
14-5-76

D: 14,222 tons light (33.765 fl) S: 23 kts (sust.)

Dim: 208.71 (195.07 pp) × 31.09 × 9.78

Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S

M: 2 sets G.E. GT; 2 props; 37,000 hp Electric: 4,000 kw Boilers: 2 Babcock & Wilcox; 77.5 kg/cm² Fuel: 3,394 tons

Range: 10,000/23 Man: 41 tot. MSC

VEHICLE CARGO SHIPS (continued)



Jupiter (T-AKR 11)

MSC, 1982

Remarks: 13,156 grt/19,172 dwt. T-AKR 10 long-term chartered 14-4-80 and T-AKR 11 on 7-5-80. Have MSC contract crews, as part of the Near-Term Prepositioning Force at Diego Garcia; owners: T-AKR 10: Lykes Brothers; T-AKR 11: Wilmington Trust Bank. Capable of carrying container, as well as vehicle, cargo and can land helicopters amidships on upper deck; can also transport 728 tons liquid cargo. Two 15-ton cranes (paired) forward. A 7.3-m-wide by 24.4-m stern ramp is fitted, and there are two side-loading doors also. Total bale cargo volume is 56,640 m³; vehicle cargo deck space is 16,258 m². Plans to acquire two more ships of this class and to enlarge and modify T-AKR 10 and 11 were abandoned.

Note: Meteor (T-AKR 9) was deactivated and placed in the Ready Reserve Force in 9-85. The similar Comet (T-AKR 7) was transferred to the Maritime Commission Ready Reserve Force 3-85, both remain Navy property.

REPLENISHMENT OILERS

♦ 0 (+9+10+...) Henry J. Kaiser class Bldr: A: Avondale SY, Westwego, La.; B: PennShip, Chester, Pa.

| T 40 107 H I V | Bldr | Budget | Laid down | L | In serv. |
|----------------------------|------|--------|-----------|---------|----------|
| T-AO 187 HENRY J. KAISER | A | FY 82 | 22-8-84 | 5-10-85 | 9-86 |
| T-AO 188 Joshua Humphreys | A | FY 83 | 17-27-84 | 22-2-86 | 1-87 |
| T-AO 189 JOHN LENTHALL | A | FY 84 | 15-7-85 | 8-86 | 5-87 |
| T-AO 190 Andrew J. Higgins | A | FY 84 | 21-11-85 | 11-86 | 9-87 |
| T-AO 191 N | В | FY 85 | | * * * | 1989 |
| T-AO 192 N | В | FY 85 | | | 1989 |
| T-AO 193 N | A | FY 85 | * * * | | 1988 |
| T-AO 194 N | A | FY 86 | | | |
| T-AO 195 N | A | FY 86 | | | |
| T-AO 196 N | | | W 18 W | | |
| T-AO 197 N | | | 140 40 | | *** |

D: 9,500 tons light (40,700 fl) S: 20 kts (sust.)

Dim: 206.50 (198.10 pp) × 29.72 × 10.67

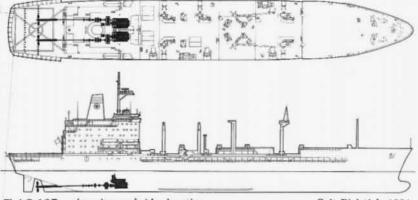
A: Provision for 2/20-mm Mk 15 CIWS (I × 2)

Electron Equipt: Radar: 2/navigational Electric: 10,600 kw

M: 2 Colt-Pielstick 10 PC4.2V diesels; 2 CP props; 32,540 hp

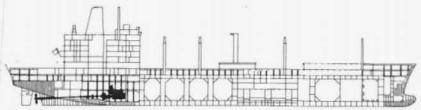
Range: 6,000/20 Man: 95 MSC crew, plus 21 Navy (137 berths)

Remarks: 26,500 dwt. Cargo: 180,000 bbl liquid (86,400 bbl fuel oil; 54,000 bbl JP-5; 39,600 convertible; plus 327 tons feedwater, 390 tons potable water), plus dry cargo and eight 20-ft. provisions containers. Initially intended to be an MSC variant of the Cimarron class, designed to merchant standards, but the design has since grown. Will be equipped for underway replenishment of liquids and solids. Helicopter deck aft, no



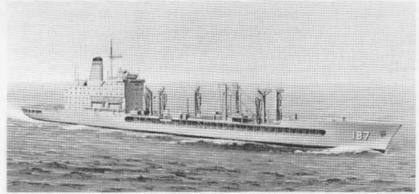
T-AO 187 - plan view and side elevation

Colt-Pielstick, 1984



T-AO 187 - centerline elevation

MSC, 1983



Henry J. Kaiser (T-AO 187) - artist's rendering

MSC, 1984

hangar. Design contract to George Sharp, Inc., 11-7-80. A total of at least 20, to replace all earlier MSC-manned replenishment oilers, is planned, but building program has been scaled back from 4/yr to 2/yr. Five alongside fueling stations (3 to port), 1 solid transfer station per side. The engines for the first two were built by Alsthom in France. Have an CGEE-Alsthom integrated auxiliary electric drive system for low speeds, driving either or both props. Will have the SLQ-25 Nixie torpedo system but no EW gear.

• 6 Neosho class (SCB 82 type)

Bldr: New York SB, Camden, N.J. (T-AO 143: Bethlehem, Quincy, Mass.)

| | L | In serv. | To MSC |
|-----------------------|----------|----------|----------|
| T-AO 143 Neosho | 10-11-53 | 24-9-54 | 25-5-78 |
| T-AO 144 MISSISSINEWA | 12-6-54 | 18-1-55 | 15-11-76 |
| T-AO 145 HASSAYAMPA | 12-9-54 | 19-4-55 | 17-8-78 |
| T-AO 146 KAWISHWI | 11-12-54 | 6-7-55 | 1-10-79 |
| T-AO 147 TRUCKEE | 10-3-55 | 23-11-55 | 30-1-80 |
| T-AO 148 PONCHATOULA | 9-7-55 | 12-1-56 | 5-9-80 |

D: 19,533 tons light (36,840 fl) S: 20 kts

Dim: 199.65 (195.07 wl) × 26.21 × 10.67

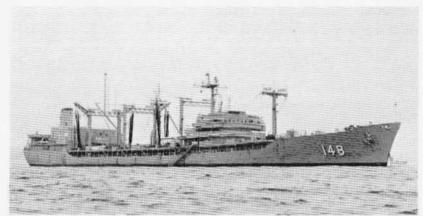
Electron Equipt: Radar: 1/SPS-10, 1/Raytheon TM 1650/6X or 12X

M: 2 sets G.E. GT; 2 props; 28,000 hp Electric: 1,500 kw

Boilers: 2 Babcock & Wilcox; 42.2 kg/cm2, 357°C

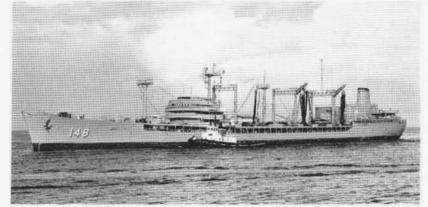
Fuel: 5,000 tons Man: 21 officers, 105 men MSC + 21 Navy

Remarks: 19,553 grt/36,840 dwt. Carry 180,000 bbl. liquid cargo (approx. 23,600 tons). Helicopter platform aft in all but T-AO 145, 146 and T-AO 148. Operated by MSC as underway-replenishment ships for Navy. Transferred to MSC as a cost-saving measure (Navy crew was 360 total). Masting and superstructures differ in detail.



Ponchatoula (T-AO 148)

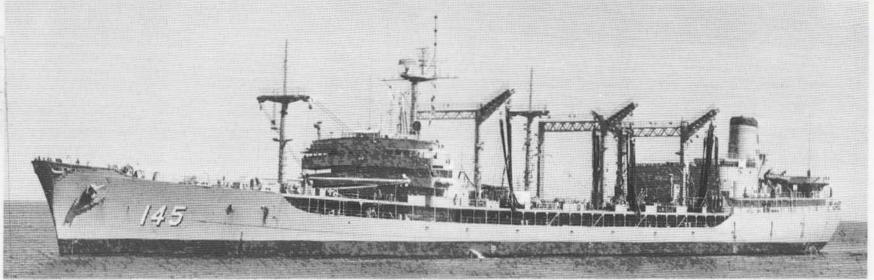
L. & L. Van Ginderen, 9-84



Ponchatoula (T-AO 148)

LSPH S. Given, R.A.N., 5-84

REPLENISHMENT OILERS (continued)



Hassayampa (T-AO 145)

♦ 5 Mispillion class (jumboized T3-S2-A3 type) Bldr: Sun SB, Chester, Pa.

| | L | In serv. | To MSC |
|---------------------|----------|----------|---------|
| T-AO 105 MISPILLION | 10-8-45 | 29-12-45 | 26-7-73 |
| T-AO 106 NAVASOTA | 30-8-45 | 27-2-46 | 13-8-75 |
| T-AO 107 Passumpsic | 31-10-45 | 1-4-46 | 24-7-73 |
| T-AO 108 PAWCATUCK | 19-2-46 | 10-5-46 | 15-7-75 |
| T-AO 109 WACCAMAW | 30-3-46 | 25-6-46 | 24-2-75 |



Mispillion (T-AO 105)

G. Arra, 1984



Waccamaw (T-AO 109)

U.S. Navy, 1984

D: 9,486 tons light (35,090 fl) S: 16 kts Dim: 196.9 × 22.9 × 10.8 Electron Equipt: Radar: 1/SPS-10, 1/Raytheon TM 1650/6X M: 2 sets Westinghouse GT; 2 props; 13,500 hp Boilers: 4 Babcock & Wilcox; 32.7 kg/cm², 393 °C Fuel: 2,205 tons Man: 23 officers, 85 men MSC, plus 21 Navy

REMARKS: 19,294 grt/23,250 dwt. Cargo: 107,000 bbl. fuel oil, diesel, etc. plus dry cargo. Fleet support units transferred from the Navy and intended for underway replenishment. Had four single 76.2-mm guns, but now disarmed. Helicopter deck forward. Replenishment station forward of bridge removed around 1980. All lengthened 28.3 m during the mid-1960s. T-AO 105 scheduled to be deactivated FY 81, but was retained in active service.

◆ 2 Cimarron class (T3-S2-A1 type) — in reserve.

Bldr: Bethlehem, Sparrows Point, Md.

L In serv. To MSC
T-AO 57 Marias 21-12-43 12-2-44 2-10-73

T-AO 57 Marias 21-12-43 12-2-44 2-10-73 T-AO 62 Taluga 10-7-44 25-8-44 4-5-72

D: 24,450 tons (fl) S: 18 kts Dim: 168.56 × 22.86 × 10.1 Electron Equipt: Radar: 1/SPS-10, 1/Raytheon 1650/9X M: 2 sets GT; 2 props; 13,500 hp Electric: 950 kw Boilers: 4 Foster-Wheeler; 31.7 kg/cm², 399°C Range: 10,000/15

Fuel: 2,205 tons Man: 20 officers, 85 men MSC, plus 16 Navy

Remarks: 12,000 grt/18,400 dwt. Cargo: 87,000 bbl. fuel oil, diesel, etc. Fleet support ships intended for underway replenishment. Deactivated and placed in National





Marias (T-AO 57)

1975

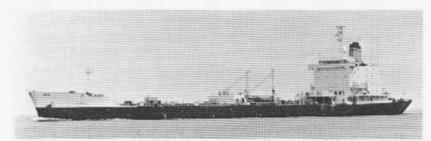
Defense Reserve Fleet (on Navy List), T-AO 57 on 22-11-82 and T-AO 62 on 21-11-83. Foreign sale of T-AO 57 no longer planned.

TRANSPORT OILERS (T-AOT)

Note: The four Falcon Lines freighting tankers chartered in 1974 and given U.S. Navy hull numbers have been returned to their owners: Neches (T-AOT 183, ex-Falcon Duchess) on 30-9-83, Columbia (T-AOT 182, ex-Falcon Lady), Hudson (T-AOT 184, ex-Falcon Princess), and Susquehanna (T-AOT 185, ex-Falcon Countess) during 1984. The single-unit tanker Potomac (T-AOT 181, ex-Shenandoah, ex-Potomac, T-AO 150) was placed in the MARAD-administered Ready Reserve Force on 5-3-84, still under Navy ownership.

♦ 9 Sealift class Bldrs: First four: Todd, Los Angeles; others: Bath Iron Works

| | L | In serv. |
|---------------------------------|----------|----------|
| T-AOT 168 SEALIFT PACIFIC | 13-10-73 | 14-8-74 |
| T-AOT 169 SEALIFT ARABIAN SEA | 26-1-74 | 6-5-75 |
| T-AOT 170 SEALIFT CHINA SEA | 20-4-74 | 9-5-75 |
| T-AOT 171 SEALIFT INDIAN OCEAN | 27-7-74 | 29-8-74 |
| T-AOT 172 SEALIFT ATLANTIC | 26-1-74 | 26-8-74 |
| T-AOT 173 SEALIFT MEDITERRANEAN | 9-3-74 | 6-11-74 |
| T-AOT 174 SEALIFT CARIBBEAN | 8-6-74 | 10-2-75 |
| T-AOT 175 SEALIFT ARCTIC | 31-8-74 | 22-5-75 |
| T-AOT 176 SEALIFT ANTARCTIC | 26-10-74 | 1-8-75 |



Scalift Antarctic (T-AO 176) — MARISAT radome atop bridge L. & L. Van Ginderen, 10-85

TRANSPORT OILERS (continued)

D: 33,000 tons (fl) S: 16 kts

Dim: 178.92 (170.80 pp) × 25.61 × 10.50

Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1645 M: 2 Colt-Pielstick, 14PC-2V400 14-cyl., 520-rpm diesels; 1 CP prop; 14,000 hp

Electric: 2,600 kw Fuel: 3,440 tons Range: 12,000/16 Man: 9 officers, 17 men, 2 cadets (contract crew)

Remarks: 17,157 grt/27,217 dwt (vary slightly). Cargo: 225,154 barrels fuel oil, diesel, etc. Equipped with bow-thruster. MSC chartered these ships for twenty years and has a commercial contractor operating them; current owner is the Irving Trust Co., New York. All redesignated T-AOT on 30-9-78. These ships may be altered to permit them to conduct underway alongside liquid replenishment. A five-year operating contract for these ships was signed with Marine Transport Lines, Secaucus, N.J., in 3-85.

Note: American Explorer (T-AOT 165) was placed in the MARAD-administered Ready Reserve Force in 6-84, still under Navy ownership.

♦ 2 Maumee class (T5-S-12A type)

| | Bldr | Laid down | L | In serv. |
|------------------|------------|-----------|---------|----------|
| T-AOT 149 MAUMEE | Ingalls SB | 8-3-55 | 16-2-56 | 12-12-56 |
| T-AOT 152 YUKON | Ingalls SB | 16-5-55 | 16-3-56 | 17-5-57 |



Yukon (T-AOT 152)

L. & L. Van Ginderen, 6-83

D: 32,000 tons (fl) S: 18 kts Dim: 189.0 × 25.5 × 9.8 Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S M: 1 set GT; 1 prop; 20,460 hp Boilers: 2 Combustion Engineering Fuel: 4,321 tons Range: 18,000/18 Man: 11 officers, 20 men MSC

Remarks: 15,626 grt/26,943 dwt. Cargo: 187,000 bbl fuel oil, diesel, etc. plus 878 m³ dry cargo. T-AOT 149 has ice-reinforced bow. Sister Potomac (T-AO 150, now T-AOT 181) rebuilt to different design. All retyped T-AOT on 30-9-78. Sister Shoshone (T-AOT 151) was placed in the MARAD-administered Ready Reserve Force in 6-84, still under Navy ownership.

♦ 1 Mission class (T2-SE-A2 type) Bldr: Marineship, Sausalito, Calif.-in reserve

Laid down T-AOT 134 MISSION SANTA YNEZ 9-9-43 19-12-43 13-3-44

D: 5,730 tons light (22,380 fl) S: 16.5 kts Dim: 159.7 (153.3 pp) × 20.7 × 9.4 M: 1 set G.E. GT, electric drive; 1 prop; 10,000 hp Electric: 1,120 kw

Boilers: 2 Babcock & Wilcox; 42.2 kg/cm2, 441°C Fuel: 1,375 tons Range: 13,000/14.5 Man: 52 tot.

Remarks: 10,461 grt/17,056 dwt. Acquired by the Navy on 22-10-47. Cargo: 16,500 tons liquid (approx. 134,000 bbl). In National Defense Reserve Fleet at Suisun Bay, Cal., since 6-3-75. Retyped T-AOT on 30-9-78.

Bldr: Sun SB & DD, Chester, Pa. - in ♦ 1 Suamico class (T2-SE-A1 type) reserve

Laid down L In serv. T-AOT 75 SAUGATUCK (ex-Newton) 16-9-42 7-7-42 19-2-43

D: 5,782 tons light (21,880 fl) S: 15 kts Dim: 159.7 (153.3 pp) × 20.7 × 9.4 M: 1 set G.E. GT, electric drive; 1 prop; 8,250 hp (T-AOT 67 and T-AOT 75: 1 set Westinghouse GT, electric drive; 1 prop; 6,600 hp)

Electric: 1,100-1,160 kw Boilers: 2 Babcock & Wilcox 42.2 kg/cm², 441°C Fuel: 1,375 tons Range: 13,000/14.5 Man: 52 tot.

Remarks: 10,296 grt/16,500 dwt. Sisters Tallulah (T-AOT 50, ex-Valley Forge), Cache (T-AOT 67, ex-Stillwater), Millicoma (T-AOT 73, ex-Conestoga, ex-King's Mountain), and Schuylkill (T-AOT 76, ex-Louisburg) were approved for disposal in 31-1-86. Taken over by the Navy while under construction and completed as a fleet oiler. Transferred to MSTS (later MSC) in 1949 and operated with civilian crews until placed in the Maritime Administration's National Defense Reserve Fleet between 1972 and 1975. Cargo: 141,000 bbl. Reclassified T-AOT on 30-9-78.

Note: The Alatna-class gasoline tankers, Alatna (T-AOG 81) and Chattahoochee (T-AOG 82) were laid up in Japan in 1984 as part of the MARAD-administered Ready Reserve Fleet. Tonti-class gasoline tanker Nodaway (T-AOG 78, ex-Tarcoola) was laid up at Pearl Harbor in 1984 in similar circumstances; all three remain Navy property. Their functions were replaced by two chartered tug/barge combinations.

TRANSPORTS

Note: The transports listed below are maintained in the Maritime Administration's reserve fleet, but remain the Navy's property, earmarked for the MSC, should the

requirement arise. Most were placed in reserve in 1969 and 1970. Of the three Barrettclass transports, Barrett (AP 196) has been on loan to the New York State Maritime Academy since 5-9-73, Geiger (AP 197), on loan to the Massachusetts Maritime Academy in 12-2-80, was damaged by fire in 1981 and was returned to the Maritime Commission for disposal, and was replaced by Upshur (AP 198).

 4 Admiral class (P2-S2-R1 type) Bldr: Bethlehem, Alameda, Cal. - in re-

| | L | In serv. |
|---|----------|----------|
| AP 122 General Alexander M. Patch (ex-Admiral R.E. Coontz) | 22-4-44 | 21-11-44 |
| AP 123 GENERAL SIMON B. BUCKNER (ex-Admiral E.W. Eberle) | 14-6-44 | 24-1-45 |
| AP 125 General Nelson M. Walker (ex-Admiral H.T. Mayo) | 26-11-44 | 24-4-45 |
| AP 126 GENERAL MAURICE ROSE | 25-2-45 | 10-7-45 |

D: 12,657 tons light (22,574 fl) S: 19 kts Dim: 185.6 (174.65 wl) × 23.01 × 8.07 Fuel: 3,877 tons Range: 15,000/19

M: 2 sets G.E. GT, electric drive; 2 props; 18,000 hp Electric: 2,000 kw Boilers: 4 Combustion Engineering "D," 42.2 kg/cm², 449°C

Man: 319 tot.

Remarks: 16,039 grt/9,944 dwt. All operated by the Army Transportation Service until 1-3-50, when transferred to MSTS (later MSC). Active into the late 1960s. Can carry 1,757 troops, 2,889 m³ dry cargo. Hugh J. Gaffey (T-AP 121) redesignated IX 507 on 1-11-78 and used as a barracks ship. General William O. Darby (AP 127) reactivated as barracks ship (IX 510) in 10-81 (see pg. 669). General Nelson M. Walker (AP 125) donated 25-1-81 to Life International for conversion as a civilian hospital ship, but remained laid up in the James River, on the Navy List in 1983. All could originally carry 5,100 troops. Two others stricken. For appearance, see IX 510.

Bldr: Federal SB & DD, Kearny, N.J. - in 3 General class (P2-S2-R2 type) reserve

| | L | In serv. |
|-------------------------------|---------|----------|
| AP 110 GENERAL JOHN POPE | 21-3-43 | 5-8-43 |
| AP 117 GENERAL W. H. GORDON | 7-5-44 | 29-6-44 |
| AP 119 GENERAL WILLIAM WEIGEL | 3-9-44 | 6-1-45 |
| (ex-General C. H. Barth) | | |



General W.H. Gordon (AP 117) - in Maritime Commission James River reserve fleet

D: 11,450 tons light (20,700 fl) S: 21 kts Dim: 189.77 × 23.01 × 7.77

M: 2 sets de Laval GT; 2 props; 17,000 hp Electric: 1,600 kw Boilers: 4 Foster-Wheeler "D," 32.7 kg/cm², 407°C

Fuel: 3,043 tons Range: 11,000/19

Man: . .

Remarks: T-AP 110: 17,927 grt/7,479 dwt; others vary. Can carry from 2,154 to 3,825 passengers or troops. Also remaining in Maritime Commission custody are sisters Gen. A.E. Anderson (ex-AP 111), Gen. W.A. Mann (ex-AP 112), Gen. William Mitchell (ex-AP 114), and Gen. J.C. Breckenridge (ex-AP 176); these, plus three Navy-owned units, are likely to be disposed of shortly.

CABLE SHIPS (T-ARC)

Bldr: National Steel, San Diego, Calif. 1 new construction

Laid down L In serv. T-ARC 7 ZEUS 9-10-82 19-3-84 1-6-81

Authorized: FY 79



Zeus (T-ARC 7) - on trials

L. & L. Van Ginderen, 7-85

CABLE SHIPS (continued)

D: 8,297 tons light (14,225 fl) **S:** 15.8 kts **Dim:** 153.2 (138.4 pp) \times 22.3 \times 7.3 Electron Equipt: Radar: 2/navigational

M: 5 G.M. EMD 20-cyl., 3,600-hp diesels, electric drive; 2 CP props; 12,500 hp

Range: 10,000/15 Fuel: 1,816 tons Electric: 3,500 kw

Man: 88 MSC crew, 8 Navy, 32 civilian technicians, 38 spare berths

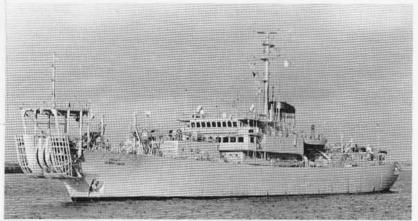
REMARKS: 3,750 dwt. Ordered 17-8-79 to replace T-ARC. Plans to request a second have been canceled. Has passive tank roll stabilization, two 1,200-hp funnel bow-thrusters forward and two aft. Cable capacity is 1,170 m3 coiled (about 590 n.m.) plus 1,004 m3 spare capacity (506 n.m.), and up to 3,117 tons of cable repeaters can be stowed. Will be able to conduct acoustic, hydrographic, and bathymetric surveys. The five main engines also provide for the ship's-service generators; there is also a 500-kw emergency generator. Painted white.

2 Neptune class (S3-S2-BP1 type)

Bldr: Pusey & Jones, Wilmington, Del.

T-ARC 2 NEPTUNE (ex-Wm. H. G. Bullard) T-ARC 6 ALBERT J. MEYER

L In serv. 1-6-53 1945 1945 13-5-63



Albert J. Meyer (T-ARC 6) - note heavy bow sheaves and OE-82 SATCOMM L. & L. Van Ginderen, 10-85

D: 5,818 tons light (8,510 fl; T-ARC 2: 8,625 fl) S: 13 kts

Dim: $112.8 (98.1 \text{ pp}) \times 14.3 \times 7.6$

Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S

M: 4 G.E. diesels, electric drive; 2 props; 4,000 hp Fuel: 980 tons (T-ARC 6: 1,129 tons) Range: 10,000/13

Man: 16 officers, 58 men MSC, 18 technicians

Remarks: T-ARC 2: 3,929 grt/2,000 dwt; T-ARC 6: 4,012 grt/4,332 dwt. Differ in detail, with T-ARC 6 being flush-decked. T-ARC 2 was in Army reserve from 1946-52, then in U.S. Navy, and was transferred to MSC 8-11-73. T-ARC 6 transferred from Army on 18-9-63. Both have been extensively modernized, including the replacement of the original Skinner Uniflow reciprocating steam plants with diesel-electric machinery: T-ARC 2 from 2-80 to 10-82 and T-ARC 6 from 3-78 to 5-80. Both have a 1,000-hp tunnel thruster forward. Cable capacity is nominally 1,240 m3 (about 625 nautical miles), and they can carry 2,020 tons of cable repeaters. T-ARC 2 had a helicopter deck; removed during modernization.

Note: Aeolus-class cable ship Aeolus (T-ARC 3, ex-Turandot, AKA 47) was stricken from the Navy List 28-3-85 and transferred to the Maritime Administration for disposal.

FLEET TUGS

| • 7 Powhatan class | Bldr: Marinette | e Marine, Wi | sc. |
|------------------------|----------------------|--------------|---------------------|
| T-ATF 166 Powhatan | Laid down 30-9-76 | L 24-6-78 | In serv. 15-6-79 |
| T-ATF 167 NARRAGANSETT | 5-5-77 | 28-11-78 | 9-1-79 |
| T-ATF 168 CATAWBA | 14-12-77 | 12-5-79 | 28-5-80 |
| T-ATF 169 Navajo | 14-12-77 | 20-12-79 | 13-6-80 |
| T-ATF 170 Mohawk | 22-3-79 | 5-4-80 | 16-10-80 |
| T-ATF 171 Stoux | 22-3-79 | 30-10-80 | 12-5-81 |
| T-ATF 172 APACHE | 22-3-79 | 20-12-80 | 30-7-81 |

Authorized: 1 in FY 75, 3 in FY 76, 3 in FY 78

D: 2,000 tons (2,260 fl) S: 15 kts Dim: 73.2 (68.88 pp) × 12.8 × 4.6 Electron Equipt: Radar: 1/Raytheon TM 1660/12S, 1/SPS-53

M: 2 G.M. EMD 20-645X7 diesels, electric drive; 2 Kort-nozzle props; 4,500 hp (3,600 sust.)

Electric: 1,200 kw Fuel: 600 tons Range: 10,000/13 Man: 6 officers, 14 men + Navy communications team

Remarks: Modified oilfield-supply-boat design built to merchant marine specifications. If required, could mount two 20-mm AA (I \times 2) and two 12.7-mm machine guns (I \times 2). Five were requested under FY 78, three approved. Have a 300-hp bow-thruster and one 10-ton electrohydraulic crane. Can carry the Mk 1 Mod. 1, 90-ton deep-diving



Navajo (T-ATF 169) - note bow anchor slot

L. & L. Van Ginderen, 10-84



Apache (T-ATF 172)

G. Arra, 12-85

support module on the stern and can support a 20-man Navy salvage team. Have a 60-ton bollard-pull capacity. Foam firefighting equipment. Hull has unusual doublechine configuration. Electrohydraulic 10-ton crane.

MILITARY SEALIFT COMMAND CHARTERED FLEET

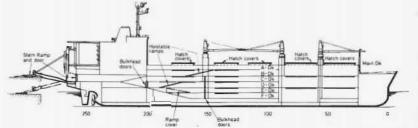
The following section describes those MSC-controlled ships on long-term charter, beginning with the 13 units intended for the Afloat Prepositioning Force (formerly the Rapid Deployment Logistics Force).

AFLOAT PREPOSITIONING FORCE (Formerly "Rapid Deployment Force")

◆ 3 (+2) 2nd Lt John P. Bobo class Maritime Prepositioning Ships Bldr: General Dynamics, Quincy

| | Laid down | L | In serv. |
|-------------------------|-----------|----------|----------|
| 2ND LT JOHN P. BOBO | 16-9-83 | 19-1-85 | 14-2-85 |
| PFC DEWAYNE F. WILLIAMS | 16-9-83 | 18-5-85 | 6-6-85 |
| 1ST LT BALDOMERO LOPEZ | 3-84 | 26-10-85 | 23-11-85 |
| 1st Lt Jack Lummus | 6-84 | 22-2-86 | 3-86 |
| SGT WILLIAM R. BUTTON | 11-84 | 5-86 | 6-86 |

D: 22,700 tons light (41,700 fl) S: 18.8 kts (trials); 17.7 kts sustained Dim: 205.18 (187.32 pp/199.00 wl) \times 32.16 \times 8.99



2nd Lt John P. Bobo

Navire, 3-83

AFLOAT PREPOSITIONING FORCE (continued)



2nd Lt. John P. Bobo

Gen. Dynamics, 2-85



2nd Lt. John P. Bobo

D. Price, 3-85

Electron Equipt: Radar: 2/navigational M: 2 Stork Werkspoor 18TM410V diesels; 1 prop; 26,400 hp Electric: 7,850 kw Range: 11,107/17.7 Fuel: 3,080 tons

Man: 30 contractor crew, 7 MSC crew, 7 Navy, 25 maintenance crew + 102 troops

Remarks: 44,543 grt/26,523 dwt (22,700 cargo dwt)/14,461 nrt. First two contracted for on 17-8-82, others on 14-1-83. Intended to transport material needed for 1/4 of one Marine Assault Battalion. Will be operated by the builder's crews. In addition to listed personnel, will have 102 temporary berths. Cargo capacity includes up to 522 standard 20-ft. vans (350 for ammunition, 110 general stores, 30 with fuel drums, and 32 refrigerated), plus 14,000 m² of roll-on/roll-off vehicle capacity to carry up to 1,400 vehicles. A Navire stern slewing ramp provides access to the six vehicle decks and can either discharge 60-ton vehicles to a pier or amphibious vehicles of up to 23 tons directly into the water; the stern door is 11 × 4.55 m. The upper deck will be used to stow 2 LCM(8) landing craft, 6 unpowered causeway sections, 4 powered causeway sections, a warping tug, 4 pipe trailers and 16 hose reels. The ships will carry 5,764.6 m³ (1,523,000 gallons) of transferable bulk fuel, plus 2,039 55-gallon drums and will also transport 307 m³ of potable water. Five 39-ton pedestal cranes are fitted, with two sets being paired, and there is a large helicopter deck at the stern. A 1,000-hp bowthruster is fitted. Unloading rates: all vehicles and % cargo at a pier in 12 hrs; all cargo at a pier in 3 days; all cargo while moored out in 5 days; there is a 4-point mooring system. Operated on expected 25-year charter by American Overseas Marine. Bobo is in MPS Squadron One; rest will form MPS Squadron 3 in 10-86.

♦ 5 Cpl Louis J. Hauge, Jr. class Bldr: Odense SY, Lindo, Denmark

| | In serv. | Acq. | Conv. by | In serv. |
|-------------------------|----------|----------|----------------|----------|
| CPL LOUIS J. HAUGE, JR. | 10-79 | 3-1-83 | Bethlehem SY, | 7-9-84 |
| (ex-Estelle Maersk) | | | Baltimore, Md. | |
| PFC WILLIAM B. BAUGH | 4-79 | 17-1-83 | Bethlehem SY, | 29-10-84 |
| (ex-Eleo Maersk) | | | Beaumont, Tx. | |
| PFC JAMES ANDERSON, JR. | 6-79 | 31-10-83 | Bethlehem SY, | 26-3-85 |
| (ex-Emma Maersk) | | | Baltimore, Md. | |
| 1st Lt Alex Bonnyman | 1-80 | 30-1-84 | Bethlehem SY, | 26-9-85 |
| (ex-Emelie Maersk) | | | Beaumont, Tx. | |
| PVT HARRY FISHER | 4-80 | 2-4-83 | Bethlehem SY, | 12-9-85 |
| (ex-Evelyn Maersk) | | | Baltimore, Md. | |



Cpl. Louis J. Hauge, Jr.

Bethlehem Steel, 1985



PFC James Anderson, Jr.

G. Arra, 10-85

D: 28,249 tons light (46,484 fl) S: 18.5 kts (17.2 sust.)

Dim: 230.25 (215.00 pp) \times 27.48 \times 10.02

Electron Equipt: Radar: 2/navigational Fuel: 3,228 tons M: 1 Sulzer 7RND 76M, 7-cyl. diesel; 1 prop; 16,800 hp

Electric: 4,250 kw Range: 10,800/17.2

Man: 30 contractor and 7 MSC crew, Navy, 30 maintenance crew + 80 troops

Remarks: Operated by Maersk Lines on long-term charter. Carry % of the vehicles, equipment, and supplies to outfit a Marine Assault Battalion. Transport up to 413 containers (280 ammunition, 86 general cargo, 23 drummed fuel, 24 refrigerated), plus providing 11,369 m² vehicle cargo space. There are 4/30-ton and 2/36-ton pedestal cranes, side-loading vehicle ports amidships, and a Navire slewing ramp has been added aft, beneath a helicopter deck. There are 8 cargo hatches, and three vehicle parking decks. Liquid cargo includes 4,920 m³ transferable vehicle fuel, 504 m³ potable water, and 2,252 m3 of lube oil. There is a bow-thruster. First 3 ordered 17-8-82, others on 14-1-83. All five are part of Maritime Prepositioning Ship Squadron 2, operating in the Western Pacific. Bonnyman originally to be named Ist Lt. Alexander Bonnyman,

3 SGT Matej Kocak class Bldr: Sun Shpbldg., Chester, Pa.

| | In serv. | Converted by | In serv. |
|--|----------|------------------------------|----------|
| Sgt Matej Kocak (ex-John D. Waterman) | 14-3-81 | National Steel, San Diego | 5-10-84 |
| PFC EUGENE A. OBREGON (ex-Thomas Heywood) | 11-82 | National Steel, San Diego | 15-1-85 |
| Maj Stephen W. Pless | 3-83 | National Steel, | 1-5-85 |

D: 15,000 tons light (38,500 fl) **S:** 20.9 kts **Dim:** 210.46 (195.07 pp) \times 32.16 \times 10.06 Electron Equipt: Radar: 2/navigational

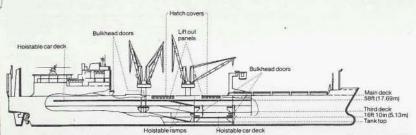
M: 2 sets G.E. GT; 1/6-bladed prop; 32,000 hp Boilers: 2; . . . Fuel: 3,450 tons (+ 300 tons diesel) Range: 13,000/20.9 Man: 85 crew, 7 MSC crew, 8 Navy, 25 maintenance crew



Sgt. Matej Kocak

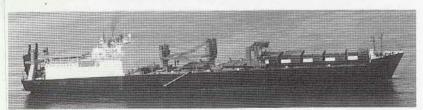
MSC, 10-84

AFLOAT PREPOSITIONING FORCE (continued)



Sgt. Matej Kocak class

Navire, 1982



Maj. Stephen W. Pless-with 20-ft. containers forward, pontoon sections and an LCM(8) on deck amidships

Remarks: 25,426 grt/22,910 dwt. First two contracted for on 17-8-82, third on 14-1-83 with Waterman Steamship Co. as operator. Intended to transport 1/4 of the vehicles, fuel, supplies, and provisions to support a Marine Assault Battalion. Will carry 213 ammunition containers, 150 "Lo/Lo" containers, 10 general cargo containers, 32 drummed fuel containers, and 32 refrigerated containers, plus a large number of vehicles and cargo fuel and water. Not lengthened during conversion, but helicopter deck and ramp added. Have paired 50-ton and paired 35-ton portal cranes and retain a traveling container gantry forward. Owned by various investment consortia. All operated from U.S. East Coast as MPS Squadron 1.

GENERAL CARGO SHIPS

♦ 1 Antarctic support ship Bldr: . . . , West Germany (In serv. 1-80)

GREEN WAVE (ex-Woerman Mira)

D: . . . S: 17 kts Dim: 154.5 × 21.3 × 7.6 M: Diesels Range: 11,000/17 Fuel: 7,725 tons Man: . .

Remarks: 9,521 grt/12,487 dwt. Charted 8-84 for 4 to 5 years from Central Gulf Lines to act as Antarctic supply ship in place of Southern Cross (T-AK 285). Has ice-strengthened hull, long hatches for container or break-bulk cargo. Six 25-ton cranes, four of which can be ganged to lift up to 80 tons from holds 3 and 4.

Bldr: Ingalls SY, Pascagoula ♦ 1 C5-78 Type Combination Cargo ship

In serv. Chartered ROVER (ex-American Rover, ex-Defiance, ex-Mormacsea) 6-3-82



Rapid

L. & L. Van Ginderen, 5-84

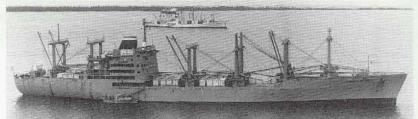
D: 27,980 tons (fl) S: 23.6 kts Dim: 183.33 (170.69 pp) × 27.43 × 10.39 Electron Equipt: Radar: 2/navigational

M: 2 sets G.E. GT; 1 prop; 30,000 hp Boilers: 2 Combustion Eng.; 74 kg/cm² Fuel: 2,790 tons Electric: 3,000 kw Range: 12,000/23.6

Remarks: 11,757 grt/15,694 dwt. Chartered from Central Gulf Lines. Cargo: 70 standard containers, plus 33,814 m³ dry cargo volume. Stern door for vehicle cargo, seven hatches. Sister Rapid off-charter 12-85.

♦ 2 Maritime Commission C4-S-69 Type Bldr: Avondale SY, Westwego, La.

Chartered In serv. 29-7-81 14-9-86 AMERICAN TITAN (ex-Colorado) 9-68 AMERICAN TROJAN* (ex-Montana) 1-69 1-12-81 23-12-86 * Near-Term Prepositioning Force



American Spitfire at Diego Garcia

MSC, 1982

D: 21,617 tons (fl) S: 23 kts Dim: 176.48 (165.96 pp) × 24.99 × 9.78 M: 2 sets G.E. GT; 1 prop; 24,000 hp Boilers: 2 Babcock & Wilcox Electric: 2,000 kw Fuel: 2,658 tons Range: 12,000/23 Man: 36 tot.

Remarks: 13,053 grt/13,074 dwt. Cargo: 21,665 m3 bale dry cargo/1,133 m3 refrigerated. Can carry standard shipping containers and can also accommodate 7,000 bbl liquid cargo. Seven cargo holds. Cranes: one 70-ton, eight 20-ton, eight 10-ton, eight 5-ton. Charters from United States Lines, have an option for extension into 1986. Graypainted, MARISAT terminals added, extra cargo containers even-stacked on superstructure. Sister American Spitfire off-charter 12-85.

• 3 Maritime Commission C4-S-66 type Bldr: Avondale SY, Westwego, La.

| | In serv. | Chartered | То |
|------------------|----------|-----------|---------|
| ELIZABETH LYKES* | 1-66 | 1983 | 5-88 |
| LETITIA LYKES* | 1-68 | 23-5-83 | 23-5-88 |
| Louise Lykes | 1965 | 5-84 | 5-88 |

* Near-Term Prepositioning Force

D: 21,840 tons (fl) **S:** 20 kts **Dim:** 164.59 (156.94 pp) \times 23.16 \times 9.96 Electron Equipt: Radar: 1/navigational Electric: 1,500 kw M: 2 sets de Laval or Westinghouse GT; 1 prop; 15,500 hp Boilers: 2 Foster-Wheeler; 49 kg/cm² Fuel: 2,753 tons Range: 12.000/20

Remarks: 10,723 grt/14,662 dwt. Chartered from Lykes Brothers Lines. Cargo: 21,240 m³ bale, plus 4,000 bbl liquid. Six hatches; one 80-ton Stülcken boom, 20 smaller capacity. Letitia Lykes carries the 1,000-bed "Navy Rapidly Deployable Medical Facility," replacing the Army portable medical facility carried by Gulf Trader at Diego Garcia on 30-6-83. Thirteen sister ships are in the Ready Reserve Force.

♦ 1 Maritime Commission C5-S-75 class

PRESIDENT ADAMS

D: . . . S: 20.8 kts Dim: 184.4 × 25.0 × 10.7

M: GT; 1 prop; . . . hp Range: 14,000/20 Fuel: 3,570 tons

REMARKS: 15.949 grt/22,208 dwt. Chartered 1984 from American President Lines for the Near-Term Prepositioning Force, but later used in ocean transportation.

2 Maritime Commission C4-S-64 class

SANTA ADELA (In serv. 1-66) Santa Juana (In serv. 1-66)

S: 20.8 kts Dim: $165.8 \times 22.9 \times 9.8$

M: GT; 1 prop; . . . hp Range: 7,000/20 Fuel: 2,354 tons

Man: . .

Remarks: 11,039 grt/13,695 dwt. Chartered 1984 from Vessel Charters, Inc. and Prudential Lines. Have 19,400 m³ dry cargo capacity plus 481 m³ refrigerated cargo and 9.000 bbl liquid cargo.

♦ 1 Maritime Commission C4-S-58 type Bldr: Ingalls SB, Pascagoula

Chartered To In serv. 3-5-88 Dawn (ex-. . . 6-63



Dawn

L. & L. Van Ginderen, 9-84

GENERAL CARGO SHIPS (continued)

D: 17.379 tons (fl) S: 20 kts Dim: 174.35 (164.90 pp) × 22.86 × 9.40

Electron Equipt: Radar: .

M: 2 sets G.E. GT; 1 prop; 18,150 hp Boilers: 2 Foster-Wheeler; 49 kg/cm² Electric: 1,800 kw Fuel: 3,353 tons Range: 17,000/20

Remarks: 11,309 grt/12,728 dwt. Chartered from Central Gulf Lines; extended 5-84. Cargo: 17,841 m³ dry bale cargo, plus 821 m³ refrigerated and 8,000 bbl liquid cargo.

FLOAT-ON/FLOAT-OFF CARGO SHIPS

1 converted tanker

Bldr: Eriksbergs Mek. Verkstads, Gothenburg, Sweden

(In serv. 17-9-75)

American Cormorant (ex-Ferncarrier, ex-Kollbris)



American Cormorant - as Ferncarrier, with a drilling rig as cargo Dyvi Heavy Lift, 1982

S: 15 kts Dim: 225.06 (213.90 pp) × 41.15 × 9.96 (20.05 flooded) M: 1 Eriksberg/Burmeister & Wain 10K84EF 10-cyl., 114-rpm diesel; 1 prop; 25,000 hp (19,700 under owner's restrictions

Range: 23,700/13 Electric: 3,360 kw Endurance: 76 days

REMARKS: 47,500 dwt. Former 135,900-dwt tanker converted to a heavy-lift float-on/ float-off cargo ship in 1982. Capacity: 45,000 tons on the 120-m × 42-m, 4,870-m2 midbody cargo deck created by removing the upper portions of the cargo tanks and reducing original length by 55 m. Chartered 10-85 for 18 mos. to test "flo-flo" utility for Military Sealift Command missions.

VEHICLE CARGO SHIPS

• 1 Finneagle class

Bldr: Kockums, Mälmo, Sweden

AMERICAN EAGLE

In serv. 20-2-81 Chartered 6-83

To

(ex-Zenit Eagle, ex-Finneagle)



American Eagle

L. & L. Van Ginderen, 4-85

D: . . . S: 19.5 kts Dim: 194.00 (180.80 pp) × 28.00 × 9.00

Electron Equipt: Radar: 2/navigational

M: 2 Cegielski-Sulzer 6RND68M diesels; 1 prop; 21,500 hp Electric: . . . Fuel: 2,850 tons Range: 16,000/19

Remarks: 15,700 grt/20,404 dwt. Chartered 6-83 for U.S.-Europe service. Versatile design capable of transporting up to 1,040 standard 20-ft. cargo vans or vehicles, with 10,500 m3 parking space for the latter. Has two side-by-side stern ramps, two bowthrusters. Can carry up to 8,500 tons salt-water ballast.

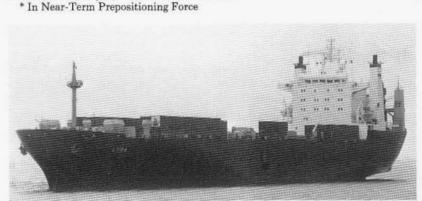
• 1 former German vehicle cargo ship Bldr: Howaldtswerke, Kiel

Lyra* (ex-Reichenfels)

In serv. Chartered 30-9-77

To

27-5-81 . . .



R.A.N., 1982

D: 9,870 tons light (24,555 fl) S: 21 kts Dim: 193.32 (178.00 pp) × 27.00 × 8.61

Electron Equipt: Radar: 1/Decca RM 1229, 1/Decca TM-S 1230

M: 12 M.A.N. 9L52/55A diesels; 1 CP prop; 18,990 hp (sust.) - 2 Lips 1,200-hp bow-thrusters

Electric: 4,590 kw Fuel: 2,579 tons Range: 27,000/18 Man: 49 tot.

Remarks: 12,160 grt/14,591 dwt. Chartered from Lykes Bros., along with the similar Cygnus (ex-Rabenfels); both had been purchased from the defunct Hansa Lines on 19-1-81. Lyra has an articulated slewing stern ramp capable of supporting 160 tons. Vehicle cargo can also enter via two 4.65×4.20 side ports. 316 20-ft or 156 40-ft cargo containers can be stowed on deck, while below decks can accommodate the equivalent of 180 40-ft wheeled trailers. A portable ramp is used between the first and second vehicle decks, and there are two 80-ton vehicle elevators serving the inner bottom. Can carry up to 6,500 tons of water ballast.

1 former German vehicle cargo ship

Bldr: Sasebo Heavy Industries, Japan

Cygnus (ex-Rabenfels)

L 30-3-77 In serv.

Chartered 28-3-81

To



Cygnus

G. Gyssels, 9-83

D: 26,455 tons (fl) S: 21.4 kts (trials) Dim: 193.21 (178.00 pp) × 27.00 × 9.12

Electron Equipt: Radar: 1/Decca RM 1229, 1/Decca TM-S 1230 M: 2 Kawasaki-M.A.N. 9L 52/5A diesels; 1 CP prop; 18,980 hp

Electric: 4,200 kw Fuel: 3,060 tons Range: 21,600/19.2 Man: 49 tot.

Remarks: 13,098 grt/14,935 dwt. Chartered from Lykes Brothers, who had purchased her from Hansa Lines 19-1-81. Can carry 522 standard 20-ft containers, plus 236 40-ft trailers, the latter in the 42,277 m³ of vehicle space. Has two 1,200-hp bow-thrusters, 160-ton capacity Navire slewing, articulated ramp aft (door 11.2-m wide × 7.5 m high) and two 40-ton capacity side ports. Used in service between U.S. and Europe.

1 Admiral Wm. M. Callaghan class

Bldr: Sun SB & DD Co., Chester, Pa.

ADMIRAL WM. M. CALLAGHAN

17-10-67

In serv.

Chartered

To 12-67 12-67



Adm. Wm. M. Callaghan

L. & L. Van Ginderen, 9-85

VEHICLE CARGO SHIPS (continued)

D: 26,573 tons (fl) S: 26 kts Dim: 211.61 (193.12 pp) × 28.00 × 8.86 Electron Equipt: Radar: 1/navigational M: 2 G.E. LM 2500 gas turbines; 2 props; 40,000 hp Electric: 1,500 kw Fuel: 4,421 tons Range: 6,000/25 Man: 33 tot.

REMARKS: 24,471 grt/13,500 dwt. Built for U.S. Navy service, as the earliest example of the current "Build-and-Charter" concept; owned by Sunexport Holdings. Original Pratt & Whitney FT-4 gas turbines replaced 12-77 by LM 2500 engines; used as trials ship for LM 2500 engine life extension and fuel economy improvements. Has stern ramp and four side-loading ports for up to 750 vehicles, on 15,607 m² of parking area. Unusual for a "Ro-Ro" in having full set of cargo booms: 2 of 120-tons capacity and 12 of 5-10 tons; flush hatches permit access to 38,515 m³ of cargo space. Used on U.S.-Europe service.

CARGO BARGE CARRIERS

| 2 Maritime Commission C9-S-81D Type La. | | Bldr: Avondale SY, Westwego | | |
|--|------------------|-----------------------------|---------------|--|
| Green Island* (ex-George Wythe, ex-Green Island) | In serv. 2-75 | Chartered 17-9-82 | To 17-9-87 | |
| GREEN VALLEY* (ex) * In the Near-Term Prepositioning Fo | 1-74 orce | 2-84 | 2-86 | |
| | | | | |



Green Island

J. Jedrlinic, 1980

D: 62,314 tons (fl) S: 22 kts Dim: 272.29 (243.03 pp) × 30.48 × 12.44

Electron Equipt: Radar: 2/navigational

M: 2 sets de Laval GT; 1 prop; 32,000 hp Boilers: 2 Combustion Eng.; 75.7 kg/cm² Fuel: 5,800 tons

Range: 15,000/22 Man: 32 tot

Remarks: 32,278 grt/46,152 dwt. Chartered from Central Gulf Lines. Unlike many LASH ships, do not have a container-handling capability. Can carry 89 standard LASH barges, loaded and unloaded by a 455-ton capacity traveling crane. Carry a small tug to move the barges.

♦ 2 Maritime Commission C8-S-81b-Type lighter carriers

Bldr: Avondale SY, Westwego, La.

| | In serv. | Chartered | To |
|-------------------------------------|----------|-----------|----------|
| American Veteran* (ex) | 1-73 | 12-4-84 | 12-4-86 |
| GREEN HARBOUR (ex-Austral Rainbow, | 5-72 | 27-10-81 | 27-10-86 |
| ex-China Bear) | 5-72 | 27-10-81 | 27-10-86 |
| * In Near-Term Prepositioning Force | 3 | | |



Green Harbour (as Austral Rainbow)

L. & L. Van Ginderen, 8-80

D: 44,606 tons (fl) S: 22.5 kts Dim: 249.94 (220.68 pp) × 30.48 × 10.70 M: 1 set de Laval GT; 1 prop; 32,000 hp Boilers: 2 Babcock & Wilcox Electric: 4,500 kw Fuel: 5,500 tons (10,427 max.) Range: 13,000/22.5

Remarks: 26,456 grt/29,820 dwt. Converted from cargo-barge-only carriers to container or barge carriers by owners, prior to lease. Can carry up to 71 cargo barges or 840 (Austral Rainbow: 1,004) standard cargo containers, handled by a 30-ton traveling crane. The traveling barge crane can lift 446 ton. Also have two 5-ton cranes. Both are carrying palletized munitions, the largest such explosive cargo ever carried by individual ships.

BULK CARRIERS

Note: To support the U.S. "Solid Fuels" program, using U.S. coal for energy at U.S. overseas military installations, one or more bulk carriers are normally on voyage or short-term charter. As of 10-85, the 14,310 grt/25,541 dwt Overseas Harriette and Overseas Marilyn were on charter.

TANKERS

| • | 3 (+2) Paul | Buck (T-5) class | Bldr: American SB, | Tampa, Fla. |
|---|-------------|------------------|--------------------|-------------|
| | | | | |

| | Laid down | L | In serv. |
|---|-----------|---------|----------|
| Paul Buck (ex-Ocean Champion) | 26-12-83 | 11-84 | 7-6-85 |
| Gus W. Darnell (ex-Ocean Freedom) | 6-2-84 | 10-8-85 | 11-9-85 |
| Samuel L. Cobb (ex-Ocean Triumph) | 1909 1 | | 11-11-85 |
| RICHARD G. MATTHIESON (ex-Ocean Spirit) | | | 10-2-86 |
| LAWRENCE H. GIANELLA (ex-Ocean Star) | * * * | 1.71.7 | 12-5-86 |



Gus W. Darnell

American SB, 9-85

D: 9,000 tons light (39,624 fl) **S**: 16 kts **Dim**: $187.45 \times 27.43 \times 10.36$

Electron Equipt: Radar: 1/. . . nav. Electric: 3,400 kw

M: 1 Mitsubishi or Ishikawajima-Sulzer 5RTA-76 diesel; 1 prop; 15,300 hp

Range: 12,000/16 Fuel: 1,675 tons Man: 23 tot.

Remarks: 19,037 grt/30,150 dwt. First two contracted for with Ocean Carriers, Houston, Texas, on 30-9-82, and other three ordered 24-4-83. Operated by Trinidad Corp., Philadelphia, Pa. Some sections of the ships built at Nashville, Tenn., for later joining to the main body, and the forebodies were subcontracted to Avondale SY. Ice-strengthened hulls. Engines in first two built by Mitsubishi; others by Ishikawajima-Harima Heavy Industries. Cargo: 240,000 bbl. Chartered for five years. Intended to replace T-AOT 149-152, 165, and 181.

♦ 2 Falcon Leader class Bldr: Bath Iron Works

| | Laid down | L | In serv. |
|--------------------|----------------|---------|----------|
| FALCON LEADER* | 7-6-82 | 26-2-83 | 19-9-83 |
| FALCON CHAMPION | | 10-9-83 | 19-1-84 |
| * In the Near Torm | Propositioning | Force | |



Falcon Leader

Skyfotos, 9-83

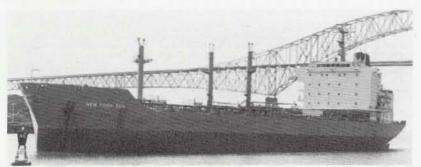
D: 42,369 tons (fl)
 S: 16 kts
 Dim: 203.0 (194.8 pp) × 25.6 × 10.97
 M: 2 de Laval Enterprise RV16 diesels; 1 prop; 14,720 hp (11,500 sust.)
 Fuel: 3,321 tons
 Range: 27,000/16
 Man: . . .

Remarks: 17,735 grt/33,870 dwt. Maritime Commission T6-M-136A design. Ordered 19-1-81 for Falcon Sea Transport Co. for 5-year charter to MSC. Cargo; 225,000 bbl. Falcon Leader replaced Neches (T-AOT 183).

TANKERS (continued)

♦ 1 New York Sun class Bldr: Sun SB, Chester, Pa.

Laid down L In serv.
New York Sun 23-3-78 22-7-79 1-81



New York Sun

J. Jedrlinic, 1981

D: 40,062 tons (fl) **S:** 15.5 kts **Dim:** $186.50 (176.78 \text{ pp}) \times 27.43 \times 11.27$ **M:** 1 Mitsubishi-Sulzer, 122-rpm 6 RND 76M diesel; 1 prop; 14,200 hp (sust.) **Fuel:** 10,213 tons **Range:** 12,000/15.5

Remarks: 19,000 grt/33,000 dwt. Operated by Sun Transport Cargo: 247,781 bbl. First U.S. ship to be powered by a low-speed diesel in 50 years. Late note: off charter 1-86.

♦ 3 Maritime Commission T6-M-98 type

Bldr: . . .

Courier (ex-Zapata Courier) (In serv. 1-77) RANGER (ex-Zapata Ranger) (In serv. 1-76) ROVER (ex-Zapata Rover) (In serv. 1-77)



Rover

L. & L. Van Ginderen, 10-83

D: . . . S: 16 kts Dim: 216.7 × 25.6 × 11.3 M: Diesels; 1 prop; . . . hp Range: 12,000/16 Fuel: 3,416 tons

Remarks: 21,572 grt/35,100 dwt. Cargo: 308,000 bbl. Chartered from Ogden Transport and operated by Ocean Carriers.

♦ 3 Overseas class Bldr: Bethlehem Steel, Sparrows Point, Md.

| | In serv. | Chartered | To |
|---|----------|-----------|------|
| Overseas Alice* | 1-68 | 8-82 | 8-87 |
| Overseas Valdez* (ex-Overseas Audrey) | 1-68 | 8-82 | 8-87 |
| Overseas Vivian* | 1-69 | 8-82 | 8-87 |
| * In the Near Torm Propositioning Force | | | |



Overseas Alice

Skyfotos, 2-83

D: 46,273 tons (fl) S: 16.25 kts Dim: 201.23 (192.03 pp) × 27.49 × 11.17 M: 2 sets G.E. GT; 1 prop; 15,000 hp Boilers: 2 . . . Electric: 1,200 kw Fuel: 2,845 tons Range: 13,000/16 Man: . . .

Remarks: 20,879 grt/38,421 dwt. Cargo: 336,000 bbl. Have 25 cargo tanks. Chartered from Overseas Bulk Tank Corporation (Overseas Alice: Inter-Continental Bulk Tankers) and operated by Maritime Overseas Corp.

♦ 1 Japanese-built Bldr: Kasado SY, Kudamatsu

KNIGHT (ex-. . .) (In serv. 1-58)

D: . . . S: 17 kts Dim: 201.5 (175.01 pp) × 27.4 × 11.01 M: 1 set GT; 1 prop; . . . hp Boilers: 2/. . .

Range: 14,000/17 Fuel: 2,871 tons

Remarks: 20,025 grt/34,723 dwt. Cargo: 275,000 bbl. Chartered 6-85 from Heavy Lift Inc.

1 Maritime Commission T2-SE-A1 class
 Bldr: Sun SB, Chester, Pa.

Texas Trader (ex-Texaco 11-44 12-44 11-80 11-85 South Carolina, ex-South

South Carolina, ex-Sout Carolina, ex-Diamond Island)



Texas Trader

J. Jedrlinic, 12-80

D: 33,946 tons (fl) S: 14.5 kts Dim: $193.2 \times 22.6 \times 10$ M: 1 set G.E. GT, electric drive; 1 prop; 10,000 hp Boilers: 2 Combustion Engineering; 42 kg/cm², 44°C Fuel: 2,017 tons Range: 12,000/14.5

Remarks: 15,129 grt/27,500 dwt. Chartered from American Trading Transportation Co. Cargo: 237,000 bbl. Stretched from original 159.6-m length in 1969 by Newport News SB & DD.

Note: The Military Sealift Command also voyage-charters tankers as needed to meet fuel and liquid cargo commitments around the world. As of 10-85, there were two U.S. registry tankers in this status: Chablis (30,806 dwt) and Mormacstar (38,300 dwt); see last edition for further details. Also under MSC control are tankers used to support the U.S. Strategic Petroleum Reserve; however, in late 1985, no tankers were on charter for that purpose.

♦ 1 coastal tanker Bldr: . . .

Bravado (In serv. 1-77)

D: . . . S: 12.5 kts Dim: 92.7 × 14.6 × 6.7 M: 1 diesel; 1 prop; . . . hp Range: 6,000/12 Fuel: 250 tons

Remarks: 2,110 grt/4,330 dwt. Cargo: 28,000 bbl. Chartered from Sealift, Inc. and operated by Ocean Carriers in the Western Pacific in place of three MSC-owned T-AOG since 1984. Also on charter for the same purpose in the Pacific area are the combination articulated tug/barges Kings Challenger/Barge Hanna 4002 and Seneca/Barge 255.

READY RESERVE FORCE

The Ready Reserve Force (RRF) is a group of vessels maintained within the National Defense Reserve Fleet (NDRF) by the Maritime Administration (MARAD) in 5-10- or 20-day readiness status. RRF ships are activated by a Navy (Military Sealift Command) request to MARAD. Selected ships are exercised periodically. Acquisition and maintenance of the RRF ships are funded by the Navy, which retains ownership of former naval units included in the fleet. As of 12-85 there were 73 ships in the RRF, most of them maintained at NDRF anchorages at Beaumont, Texas, Suisun Bay, California, and in the James River, Virginia. In addition to these ships, there are approximately 135 units in the NDRF that could be activated given longer notice. The RRF is scheduled to grow to 116 ships by the late 1980s.

ROLL-ON/ROLL-OFF CARGO SHIPS

• 5 former Barber Line ships

| | Bldr | In serv. |
|----------------------------|--------------------------|----------|
| CAPE DECISION (ex-Tombara) | Eriksberg, Göteborg | 30-8-73 |
| CAPE DIAMOND (ex-Tricolor) | Ch. de France, Donkerque | 9-72 |
| Cape Domingo (ex-Tarago) | Ch. de France, Donkerque | 1-73 |
| Cape Douglas (ex-Lalandia) | Eriksberg, Göteborg | 22-2-73 |
| CAPE DUCATO (ex-Berenduna) | Eriksberg, Göteborg | 9-72 |

D: 35,173 tons (fl) S: 22 kts Dim: 207.34 (193.24 pp) × 29.57 × 9.59 Electron Equipt: Radar: 2/Raytheon . . . Electric: 4,180 kw M: 3 SEMT-Pielstick 18PC2V diesels; 1 CP prop; 22,860 hp Man: 36 tot.

Remarks: 13,887 grt/21,500-23,725 dwt. Five-deck vehicle cargo ships acquired 1-85 and "reflagged" (safety features upgraded to U.S. Coast Guard standards by Bethlehem Steel, Sparrows Point, Md.). Delivered for storage in the James River, Virginia. Work began 3-85 for completion by 11-85. 1,500-hp bow/1,000-hp stern thrusters; 65-ton stern ramp. 1,327 containers/52,863 m³ bale capacity. Photo in addenda.

♦ 1 Meteor class (C4-ST-67a type) Bldr: Puget Sound Bridge & DD

Laid down L In serv.

METEOR (T-AKR 9, ex-Sea Lift, ex-LSV 9) 19-5-64 18-4-64 25-5-67

ROLL-ON/ROLL-OFF CARGO SHIPS (continued)



Meteor (T-AKR 9)

L. & L. Van Ginderen, 1984

D: 9,154 tons light (21,480 fl) S: 22 kts Dim: 164.7 × 25.5 × 8.8 Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S M: 1 set GT; 2 props; 19,400 hp Boilers: 2; 52.8 kg/cm², 471°C Range: 10,000/20 Man: 56 tot. MSC

Remarks: 16,467 grt/12,326 dwt. Cargo: 10,200 tons: 26,819 m3 vehicle parking volume (7,896 m² deck space). Stern and four side ramps for Ro-Ro loading/unloading. Can carry 12 passengers. Authorized as T-AK 278, completed as T-LSV 9, retyped T-AKR 14-8-69. Renamed 12-9-75. Assigned to Rapid Deployment Force 4-80-6-81. Placed in Ready Reserve Force 9-85.

♦ 1 Maritime Administration C3-ST-14A type

Bldr Laid down In serv. Sun SB & DD, Chester, Pa. 15-5-56 31-7-57 COMET (T-AKR 7) 27-1-58



Comet (T-AKR 7)

L. & L. Van Ginderen, 9-82

D: 8,175 tons light (18,286 fl) S: 18 kts Dim: 152.1 × 23.8 × 8.9 Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S M: 1 set G.E. GT; 1 props; 13,200 hp Fuel: 2,423 tons Range: 12,000/18 Boilers: 2 Babcock & Wilcox; 43.3 kg/cm³, 454°C Man: 16 officers, 40 men MSC

Remarks: 13,792 grt/10,111 dwt. Cargo: 7,350 tons: more than 700 military vehicles in holds totaling 19,370 m3 volume (7.525 m2 deck space). Side and stern ramps. Denny-Brown fin stabilizers. Authorized as T-AK 269, changed to T-LSV 7 on 1-6-63, then to T-AKR 7 on 1-1-69. Remains Navy property; placed in the Maritime Administration RRF in 3-85.

AIRCRAFT MAINTENANCE SHIPS

♦ 2 converted Maritime Administration C5-S-78a, "Seabridge" type Bldr: . . .

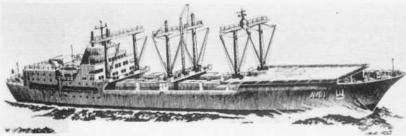
Conversion T-AVB 3 WRIGHT (ex-Young America) 1970 14-12-84 to 3-86 T-AVB 4 CURTISS (ex-Great Republic) 1969 9-86

D: 23,872 tons (fl) S: 23.6 kts Dim: 183.2 × 27.4 × 9.0

Electron Equipt: Radar: 2/. . . nav.

M: 2 sets GT; 1 prop; 30,000 hp Boilers: 2; . . . Fuel: 2,904 tons Range: 12,000/23.6 Man: 2 officers, 39 men + 25 officers, 300 Marines

Remarks: Roll-on/Roll-off vehicle cargo and container carriers being converted by Todd SY, Galveston, Texas, to transport the men and equipment vans of a Marine Intermediate Maintenance Activity in support of aircraft deployed ashore. Additional accommodations built on aft and helicopter deck added over former forward hold. Will still be able to carry 664 standard 20-ft containers and 14,000 bbl liquid cargo. Intended to revert to cargo-carrying role after delivering the aviation support personnel and equipment. Will be maintained in the RRF (but not strictly part of it), being broken out for exercises.



Wright (T-AVB 3) - artist's concept

S. Holt/MSC, 1983

AUXILIARY CRANE SHIPS (T-ACS)

 ◆ 2 (+1) Maritime Administration C6-S-1qd class Bldr: National Steel, San Diego, Cal.

| m 100 | In serv. | Conv. |
|--|----------|-------|
| T-ACS 1 KEYSTONE STATE (ex-President Harrison) | 1-66 | 5-84 |
| T-ACS 2 GEM STATE (ex-President Monroe) | 1965 | 10-85 |
| T-ACS 3 GRAND CANYON STATE (ex-President Polk) | 1-65 | 9-86 |



Keystone State

MSC, 6-84

D: 28,660 tons (fl) S: 20 kts Dim: 203.82 (192.95 pp) × 23.22 × 10.06

Electron Equipt: Radar: 2/. . . nav. Electric: 4,780 kw

M: 2 sets G.E. GT; 1 prop; 19,250 hp Boilers: 2; . .

Range: 13,000/20 Fuel: 3,450 tons Man: 18 officers, 71 men

Remarks: 17,128 grt/13,600 dwt. Cargo: 303 20-ft containers. "T-ACS" is an authorization number and not an official U.S. Navy hull number designation. Conversion of T-ACS 1 by Bay SB, Sturgeon Bay, Wisc., took place under FY 83 funding; ordered 18-3-83. T-ACS 1 (FY 84) began conversion 9-10-84 by Continental Marine, San Francisco. T-ACS 3's conversion was authorized under FY 85, but had not been contracted for by 10-85. T-ACS 4-6 were authorized under FY 86 and will be of a different class; two per year additional conversions are programmed FY 87-89 for a

In T-ACS 1-3, the original cargo-handling gear was replaced by three sets of twin 30-ton cranes mounted on the starboard side. The T-ACS is expected to unload its own container cargo and then unload containers from non-self-sustaining container carriers at the rate of about 300 containers per day; the cranes have a 33-m reach. Additional generator capacity (3,280 kw) was added. In wartime, or during peacetime exercises, the ships will operate under MSC control, with contractor crews; they will be maintained as part of the MARAD-administered Ready Reserve Force. All will carry state nicknames in place of their previous names.

CARGO BARGE CARRIERS

♦ 1 Maritime Commission C8-S-81b type lighter carrier

Bldr: Avondale SY, Westwego, La.

Austral Lightning (ex-Lash España) (In serv. 4-71)



Austral Lightning - with mixed barge and container cargo, at Diego Garcia MSC, 1982

CARGO BARGE CARRIERS (continued)

D: 44,606 tons (fl) S: 22.5 kts Dim: 249.94 (220.68 pp) × 30.48 × 10.70 M: 1 set de Laval GT; 1 prop; 32,000 hp Boilers: 2 Babcock & Wilcox Electric: 4,500 kw Fuel: 5,500 tons (10,427 max.) Range: 13,000/22.5

Remarks: 26,456 grt/29,820 dwt. LASH-ship, converted from cargo barge-only carrier to container or barge carrier. Can carry up to 71 cargo barges or 840 standard cargo containers, handled by a 30-ton traveling crane. The traveling barge crane can lift 446 tons. Also has two 5-ton cranes. Formerly chartered for the Near-Term Prepositioning Force, for which two sisters will operate. The larger C9-S-81 LASH ships Benjamin Harrison and Edward Rutledge are in the NDRF at Beaumont, Texas.

GENERAL CARGO SHIPS

• 3 Maritime Administration C3-S-76a type Bldr: . . . (In serv. 1968)

DEL MONTE DEL VALLE DEL VIENTO

D: . . . S: 18.6 kts Dim: 159.1 × 21.3 × 9.4 M: 2 sets GT; 1 prop; 11,700 hp Boilers: 2/. . . Range: 15,000/18.6 Fuel: 2,175 tons

Remarks: 10,396 grt/13,039 dwt. Cargo: 17,077 m³ bale dry cargo, 1,246 m³ refrigerated cargo, 11,000 bbl liquid. Six holds. One 75-ton boom, . . . smaller. All laid up at Beaumont, Texas.

♦ 6 Maritime Administration C4-S-65a class Bldr: . . .

Santa Barbara (In serv. 1967)
Santa Clara (In serv. 1966)
Santa Cruz (In serv. 1966)
Santa Isabel (In serv. 1967)
Santa Lucia (In serv. 1966)

D: . , . S: 20 kts Dim: 170.7 × 24.7 × 9.1 M: 2 sets GT; 1 prop; 14,000 hp Boilers: 2/. . . Range: 12,000/20 Fuel: 2,287 tons

Remarks: 9,322 grt (S. Cruz, S. Lucia: 9,313)/12,472-12,693 dwt. Cargo: 20,872 m³ bale dry cargo, plus 7,000 bbl liquid. Can carry 12 passengers. Santa Isabel has a 150-ton heavy-lift boom; the others have a 70-ton boom. Seven holds. All laid up in the James River, Virginia.

◆ 5 Maritime Administration C4-S-66 type Bldr: Avondale SY, Westwego, La.

CAPE BLANCO (ex-Mason Lykes) 9-66
CAPE BON (ex-Velma Lykes) 1-67
CAPE BORDA (ex-Howell Lykes) 1-67
CAPE BOVER (ex-Frederick Lykes) 1-67
CAPE BRETON (ex-Dolly Turman) 5-67



Cape Breton (as Dolly Turman)

Airfoto, 1981

D: 21,840 tons (fl) S: 20 kts Dim: 164.59 (156.94 pp) × 23.16 × 9.96 Electron Equipt: Radar: 1/nav. Electric: 1,500 kw M: 2 sets de Laval or Westinghouse GT; 1 prop; 15,500 hp Boilers: 2 Foster-Wheeler; 49 km/cm² Fuel: 2,753 tons Range: 12,000/20

REMARKS: 10,723 grt/14,662 dwt. Break-bulk ships purchased from Lykes Brothers Lines for \$21,250,000 in 1-85. Cargo: 21,240 m³ bale plus 4,000 bbl liquid. Six hatches; one 80-ton heavy-lift boom, 20 smaller.

◆ 18 Maritime Administration C3-S-37c type
 Bldr: . . . (In serv. 1963-64)

CAPE ANN (ex-. . .) CAPE CHARLES (ex-Charlotte Lykes) Cape Alexander (ex-. . .) CAPE CLEAR (ex-Mayo Lykes) Cape Archway (ex-. . .) Cape Cod (ex-Sheldon Lykes) CAPE ALAVA (ex-. . .) GULF BANKER CAPE AVINOF (ex-. . .) GULF FARMER CAPE CANAVERAL (ex-Allison Lykes) GULF MERCHANT Cape Canso (ex-Aimee Lykes) GULF SHIPPER CAPE CARTHAGE (ex-Margaret Lykes) GULF TRADER CAPE CATOCHE (ex-Christopher Lykes) CAPE CHALMERS (ex-Adabelle Lykes)



Cape Alava

W. Donko, 7-85

D: . . . S: 18.0 kts Dim: 150.8 × 21.0 × 9.75 Electron Equipt: Radar: 1/. . . nav. M: 2 sets GT; 1 prop; 11,000 hp Boilers: 2/. . . Range: 17,000/18 Fuel: 2,827 tons

Remarks: 9,296 grt/12,684 dwt. Cargo: 16,000 m³ dry bale, plus 8,000 bbl liquid. Five cargo holds; 1/60-ton boom, 20 others.

♦ 3 Maritime Administration C4-S-57a type Bldr: . . . (In serv. 1963)

PIONEER COMMANDER PIONEER CONTRACTOR PIONEER CRUSADER

D: . . . S: 21.0 kts Dim: 171.0 × 22.9 × 9.8 M: 2 sets GT; 1 prop; 19,500 hp Boilers: 2; . . . Range: 12,000/21 Fuel: 2,538 tons

Remarks: 11,164 grt/13,535 dwt (varies slightly). Cargo: 18,210 m³ bale dry cargo, 1,246 m³ refrigerated, 8,000 bbl liquid. Six holds. One 70-ton boom, . . . smaller. All stored at Beaumont, Texas.

◆ 1 Maritime Administration C4-S-1u type Bldr: . . .

Santa Ana (In serv. 1963)

D: . . . S: 20.0 kts Dim: 172.2 × 23.2 × 9.8 M: 2 sets GT; 1 prop; 19,200 hp Boilers: 2; . . . Range: 14,000/20 Fuel: 3,266 tons

Remarks: 12,724 grt/14,376 dwt. Cargo: 19,059 m³ bale dry cargo, 1,104 m³ refrigerated, 17,000 bbl liquid; can also carry 12 passengers. Has 6 holds; one 60-ton boom, . . . smaller. Stored at Beaumont, Texas.

♦ 1 Maritime Commission C4-S-1u type Bldr: . . .

California (In serv. 1962)

D: . . . S: 20.0 kts Dim: 172.2 × 23.2 × 9.8 M: 2 sets GT; 1 prop; 19,200 hp Boilers: 2; . . . Range: 14,000/20 Fuel: 3,266 tons

Remarks: 12,693 grt/14,349 dwt. Cargo: 19,059 m³ bale dry cargo; 1,104 m³ refrigerated cargo; 17,000 bbl liquid; 12 passengers. Six holds; 1/60-ton boom; several smaller. Stored at Naval Supply Center, Oakland, Cal.

◆ 2 Maritime Administration C3-S-46a type Bldr: National Steel, San Diego

Banner (In serv. 1961) Courier (In serv. 1962)



Builder (sister in NDRF)

L. & L. Van Ginderen, 1-84

D: 19,400 tons (fl) S: 18.5 kts Dim: 150.26 (143.26 pp) × 22.25 × 9.32 Electron Equipt: Radar: 2/. . . nav.

M: 2 sets G.E. GT; 1 prop; 13,750 hp Boilers: 2 Babcock & Wilcox; 53 kg/cm² Range: 13,000/18.5 (Courier: 9,000)

Fuel: 3,280 tons (Courier: 1,333 tons) Electric: 1,400 kw

GENERAL CARGO SHIPS (continued)

Remarks: Banner: 10,659 grt/12,629 dwt; Courier: 11,000 grt/12,705 dwt. Cargo: Banner: 18,776 m3 bale dry cargo, 708 m3 refrigerated, 12,000 bbl liquid; Courier: 20,277 m3 bale dry cargo; 12,000 bbl liquid. Six holds; one 60-ton boom, 18 smaller, plus 2 cranes. Courier altered to carry containers. In James River, Virginia, with non-RRF sisters Builder and Commerce; sister Buyer is in NDRF at Beaumont, Texas.

♦ 1 Maritime Administration C4-S-1Q type

President (In serv. 1961)

D: . . . S: 20.0 kts Dim: 171.9 × 23.2 × 9.6 M: 2 sets GT; 1 prop; 17,500 hp Boilers: 2; . . .

Range: 14,000/20 Fuel: 3,211 tons

Remarks: 13,265 grt/14,244 dwt. Cargo: 14,840 m3 bale dry cargo, 736 m3 refrigerated, 10,000 bbl liquid, 12 passengers. Partially configured for carrying containers. Seven holds. Stored at Suisun Bay, Cal., with non-RRF sister, Lincoln.

♦ 5 Maritime Administration C3-S-33a type

Bldr: Sun SB & DD Co., Chester, Pa., and Todd SY, San Pedro, Cal.

| | In serv. |
|---|----------|
| Lake (ex-Mormaclake) | 1961 |
| NORTHERN LIGHT (T-AK 285, ex-Cove, ex-Mormaccove) | 1961 |
| Pride (ex-Mormacpride) | 1960 |
| Scan (ex-Mormacscan) | 1961 |
| Southern Cross (T-AK 286, ex-Trade, ex-Mormactrade) | 1962 |
| | |



Southern Cross (as T-AK 285)

G. Gyssels, 6-83



Lake (with Scan beyond)

A.D. Baker, 8-84

D: 18,365 tons (fl) S: 19 kts Dim: 148.15 (139.59 pp) × 20.72 × 8.68 Electron Equipt: Radar: ex-T-AK: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1650/12S; others: 1/. . . nav.

M: 1 set G.E. GT; 1 prop; 12,100 hp (15,700 emergency/11,000 normal)

Boilers: 2 Combustion Engineering; 43.3 kg/cm², 457°C Fuel: 2,556 (T-AK: 3,064) Range: 14,000/18

Electric: 1,275 kw Man: 68 togt.

Remarks: 9,260 grt/12,500 dwt. Cargo: 16,992 m3 bale dry cargo and 1,333 m3 refrigerated cargo, 20,000 bbl liquid cargo. Have 5 holds, plus 10 deep tanks for liquids. One 75-ton, 8/10-ton, and 10/5-ton cargo booms. Accommodations for 12 passengers. Lake and Scan, stored at Philadelphia NSY, were to have been converted into survey ships T-AGS 39 and 40; Northern Light was acquired for the U.S. Navy Military Sealift Command 22-4-80 and laid up in the RRF 9-84, while Southern Cross, acquired 30-4-80 for MSC, was laid up after refit in 2-85.

◆ 4 Maritime Administration C3-S-38a type Bldr: . . .

ADVENTURER (In serv. 1960)

AIDE (In serv. 1961)

AGENT (In serv. 1961)

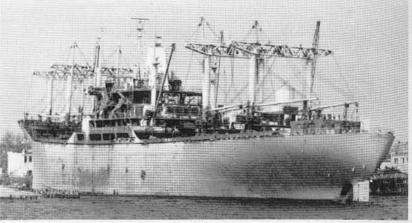
Ambassador (In serv. 1960)

D: . . . S: 18.5 kts Dim: 150.27 × 22.25 × 8.53

Electron Equipt: Radar: 1/. . . nav.
M: 1 set GT; 1 prop; 13,000 hp Boilers: 2; . . .

Range: 13,000/18.5 Fuel: 2,230 tons

Remarks: 7,848 grt/10,986-11,089 dwt. Cargo: 16,284 m3 bale dry plus 9,000 bbl liquid. Can carry 12 passengers. Have 5 holds. All stored in the James River, Virginia.



Adventurer - in refit for RRF

L. & L. Van Ginderen, 5-84

♦ 1 Maritime Administration C4-S-1H "Mariner" type Bldr: . . .

CRACKER STATE MARINER (In serv. 1954)

D: . . . S: 20.0 kts Dim: 171.80 (160.94 pp) × 23.24 × 9.45 M: 1 set G.E. GT; 1 prop; 22,000 hp Boilers: 2; 42.3 kg/cm2, 467°C Range: 18,000/20 Fuel: 3,808 tons

Remarks: 9,069 grt/13,409 dwt. Cargo: 17,898 m3 bale dry cargo, 821 m3 refrigerated, 23,000 bbl liquid, 12 passengers. Has six holds. Stored in James River, Virginia, with non-RRF sisters Old Dominion Mariner and Lone Star Mariner; sister Hoosier Mariner is in the NDRF at Beaumont, Texas.

♦ 3 Maritime Administration VC2-S-AP2 "Victory" type

AMERICAN VICTORY (ex-Carthage, AG 185; in serv. 6-45)

CATAWBA VICTORY (In serv. 7-45) HATTIESBURG VICTORY (in serv. 9-45)

D: Approx. 13,000 ft S: 16.5 kts Dim: 138.76 (133.05 pp) × 18.90 × 8.53

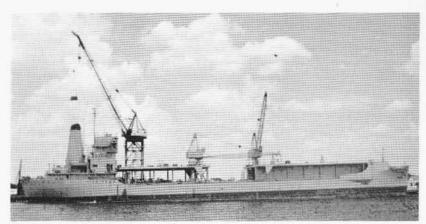
M: 1 set cross-compount GT; 1 prop; 6,600 hp Boilers: 2; 37 kg/cm², 399°C Fuel: 2,881 tons Range: 24,000/16.5

Remarks: 7,637 grt/10,681 dwt. Cargo: 12,829 m³ bale dry cargo. Five holds; one 50-ton boom, 14/5-ton booms. Classic "Victory" ship used in trials 1984-85 to determine continued utility of the 103 remaining ships of this design in the NDRF. Catawba and American Victory are in the James River with 38 sisters; Hattiesburg Victory is at Beaumont, Texas with 18 sisters, and 44 are at Suisun Bay, Cal.

3 Seatrain-type former T2-SE-A2 tankers

Bldr: Marinship Corp., Sausa-

In serv. Location Maine (ex-Seatrain Maine, ex-Tomahawk) 4-44 James R. Оню (ex-Seatrain Ohio, ex-Mission San Jose) 1-44 Beaumont Washington (ex-Seatrain Washington, ex-Mission San Diego) Beaumont 4-44



Washington

MSC, 1980

D: . . . **S:** 16.5 kts **Dim:** 170.66 (164.3 pp) \times 20.70 \times 8.22 M: 1 set G.E. GT, electric drive; 1 prop; 10,000 hp Electric: 1,120 kw Boilers: 2 Babcock & Wilcox; 42.2 kg/cm², 441°C

Range: 12,000/16 Fuel: 2,438 tons Man: . . .

Remarks: Maine: 8,025 grt/12,249 dwt; Ohio: 8,047 grt/12,293 dwt; Washington: 8,039 grt/12,292 dwt. Converted to carry containers, railway cars, and vehicles by Maryland SB & DD, Baltimore, for Hudson Waterways Corp. 1966-67, using portions of various tankers plus a new mid-body; ex-original names above are those of the propulsion sections. Can also carry aircraft. Sisters Florida and Puerto Rico are also in National Defense Reserve Fleet, but not in RRF.

TANKERS

♦ 1 Potomac class Bldr: Ingalls SB, Pascagoula, Miss.

Laid down In serv.

POTOMAC (T-AOT 181, ex-Shenandoah, 9-6-55 1-57/14-12-64 ex-Potomac, T-AO 150)



Potomac (T-AOT 181) - with MARISAT radome

J. Jedrlinic, 12-79

D: 35,000 tons (fl) S: 18 kts Dim: 189.0 × 25.5 × 10.4 Electron Equipt: Radar: 1/Raytheon RM 1650/6X, 1/Raytheon 1660/12S

M: 1 set GT; 1 prop; 20,460 hp Boilers: 2 Fuel: 4,321 tons Range: 18,000/18 Man: 11 officers, 20 men MSC

Remarks: 15,739 grt/26,040 dwt. Carries 200,000 bbl fuel plus 878 m³ dry cargo. Originally belonging to the *Maumee* class, she was heavily damaged in 1961; only her stern was salvaged. Rebuilt by Sun SB & DD, Chester, Pa., and operated on charter to MSC as the *Shenandoah* from 1964 until purchased on 12-1-76. Reclassified T-AOT on 30-9-78. Placed in RRF at Suisun Bay on 5-3-84. Briefly used for trials with the prototype "Product Transfer System," a 4-mile floating offshore pipeline for bringing fuels to a beachhead.

1 American Explorer class (T5-S-RM2A type) Bldr: Ingalls SB, Pascagoula, Miss.

AMERICAN EXPLORER (T-AOT 165) Laid down L In serv. 9-7-57 11-5-58 27-10-59



American Explorer (T-AOT 165)

L. & L. Van Ginderen, 4-81

D: 8,400 tons light (31,300 fl) S: 20 kts Dim: 187.5 × 24.4 × 9.8 Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S M: 1 set GT; 1 prop; 22,000 hp Boilers: 2 Babcock & Wilcox Fuel: 3,482 tons Range: 14,000/20 Man: 11 officers, 20 men MSC

Remarks: 14,984 grt/22,908 dwt. Cargo: 174,000 bbl fuel oil, diesel, etc. plus 878 m³ dry cargo. Operated by commercial firm. Retyped AOT on 30-9-78. Deactivated to RRF 6-84 at Beaumont, Texas.

◆ 1 Maumee class (Maritime Administration T5-S-12a type)

Bldr Laid down L In serv.
SHOSHONE (T-AOT 151) Sun SB, Chester, Pa. 15-8-55 17-1-57 15-4-57

D: 32,000 tons (fl) S: 18 kts Dim: 189.0 × 25.5 × 9.8
 Electron Equipt: Radar: 1/Raytheon TM 1650/6X, 1/Raytheon TM 1660/12S
 M: 1 set GT; 1 prop; 20,460 hp Boilers: 2 Combustion Engineering
 Fuel: 4,321 tons Range: 18,000/18 Man: 11 officers, 20 men MSC

Remarks: 15,626 grt/26,943 dwt. Cargo: 187,000 bbl fuel oil, diesel, etc. plus 878 m³ dry cargo. T-AOT 149 has ice-reinforced bow. Sister *Potomac* (T-AO 150, now T-AOT 181) rebuilt to different design. All retyped T-AOT on 30-9-78. Attached to the Near-Term Rapid Deployment Force on 30-9-83, but deactivated to the RRF at Suisun Bay 6-84. Two sisters remain in Military Sealift Service.

♦ 1 stretched Maritime Administration T2-SE-A1 type

Bldr: Sun SB, Chester, Pa.

CHANCELLORSVILLE (L: 10-43)

D: . . . S: 14.5 kts Dim: 178.31 (171.91 pp) × 24.46 × 10.06 M: 1 set G.E. GT, electric drive; 1 prop; 7,240 hp (6,000 sust.) Boilers: 2 Babcock & Wilcox; 42.2 kg/cm², 441°C

Range: 12,000/14.5 Fuel: 11,485 tons Electric: 1,160 kw

Remarks: 14,445 grt/25,194 dwt. Cargo: 205,000 bbl liquid, 425 m³ bale dry cargo. Stretched with new midbody built by Mitsubishi, Yokohama, by Todd SY, Alameda, Cal., completing 7-61. Stored at Beaumont, Texas.

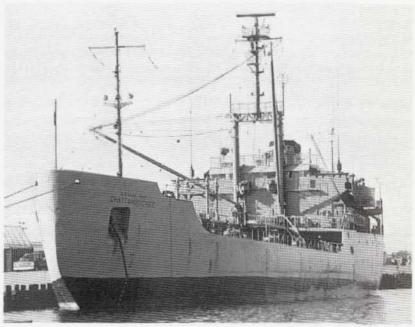
GASOLINE TANKERS

♦ 2 Alatna class (T1-MET-24a type) Bldr: Bethlehem Steel, Staten L. N.Y.

L In serv.

ALATNA (T-AOG 81) 6-9-56 7-57

CHATTAHOOCHEE (T-AOG 82) 4-12-56 22-10-57



Chattahoochee (T-AOG 82)

L. & L. Van Ginderen, 12-83

D: 5,720 tons (fl) S: 12 kts Dim: 92.0 × 18.6 × 7.0 M: 4 Alco diesels, Westinghouse electric motors; 2 props; 4,000 hp Fuel: 535 tons Range: 5,760/10 Man: 51 tot.

Remarks: 3,459 grt/4,933 dwt. Icebreaker-type hulls; originally intended as Arctic/ Antarctic support ships. Cargo: 30,000 bbls light petroleum products. Both placed in the Maritime Administration's reserve fleet on 8-8-72; reactivation began 28-11-79 at National Steel, San Diego. Returned to service to replace T-AOG 77 and T-AOG 79, T-AOG 81 on 3-2-82 and T-AOG 82 on 11-1-82. Received new diesel engines. Small helicopter deck aft. Laid up 1984 in Japan as part of the RRF when replaced by chartered tug/barge combinations.

♦ 1 Tonti class (T1-M-BT2 type)

Bldr: Todd SY, Houston, Texas

Laid down L In serv.
Nodaway (T-AOG 78, ex-Tarcoola) 19-2-42 15-5-45 11-9-50

D: 2,060 tons light (5,984 fl) S: 10 kts Dim: 99.1 × 14.7 × 5.9 Electron Equipt: Radar: 1/Raytheon 1660, 1/R.C.A. CRM-N1C-75 M: 2 Nordberg diesels; 1 prop; 1,400 hp Electric: 515 kw Fuel: 154 tons Range: 5,500/10 Man: 11 officers, 34 men MSC

Remarks: 3,160 grt/3,933 dwt. Cargo: 31,284 bbl light fuels (diesel, JP-5, gasoline). Laid up 1984 at Pearl Harbor as part of the RRF.

UNITED STATES COAST GUARD

Personnel (1-85): 5,181 officers, 1,448 warrant officers, 31,316 enlisted and 728 cadets, plus 5,729 civilians, 16,000 Reserves, and 40,000 Coast Guard Auxiliary

GENERAL

The Revenue Marine, which was created in 1790, became the Coast Guard on 28 January 1915 by act of Congress. Until 1 April 1967 the Coast Guard was part of the Department of the Treasury; at that time it was transferred to the Department of Transportation. The act that created the service calls for it to operate in time of crisis under the control of the Navy. The principal responsibilities of the Coast Guard are:

preparation and training for combat in cooperation with the Navy;
 enforcement of the laws of the sea and the policing of navigation;

 control of territorial waters, suppression of smuggling, and policing and assisting the fishing industry;

-surveillance of the coasts and protection of access to ports and bases;

- search and rescue at sea, including transocean air routes;

 manning and maintaining aids to navigation: lighthouses, beacons, buoys, and Loran stations (46,000 in all);

-control of piloting and the investigation of accidents at sea;

control of the safety and seaworthiness aspects of shipbuilding;

international ice patrols (keeping track of drifting icebergs);

-protection of offshore oil installations;

-pollution control and protection of the environment;

- meteorologic, oceanographic, and hydrographic surveying.

ORGANIZATION

The Coast Guard is divided into two main components, one for the Pacific and one for the Atlantic. Each of these area commands is headed by a rear admiral. The Coast Guard is further divided into twelve Coast Guard Districts in order to fulfill its responsibilities along the U.S. coastline (more than 10,000 nautical miles, not including Hawaii).

A four-star admiral heads the Coast Guard. He is appointed for four years and is assisted by a general staff. The commandant reports to the Secretary of Transportation and not the Joint Chiefs of Staff.

COMPOSITION OF THE FLEET

Coast Guard patrol ships have their names preceded by USCGC (United States Coast Guard Cutter). Cutters and patrol craft are white, icebreakers have red hulls, buoy tenders, black. All ships and craft carry a diagonal red stripe and the USCG shield on the

As of 1-86 the in-service, seagoing USCG fleet was composed of the following:

- ♦ 15 high-endurance cutters (WHEC):
 - 12 Hamilton class, 3,050 tons (fl)
 - 1 Casco class, 2,505 tons (fl)
 - 2 Secretary class, 2,656 tons (fl)
- ◆ 33 medium-endurance cutters (WMEC) from 935 to 1,745 tons (fl)
- 5 icebreakers (WAGB)
- ♦ 3 air-cushion patrol boats (WSES)
- 79 patrol craft (WPB), 105 tons (fl) and 66 to 69 tons (fl)
- ◆ 43 seagoing buoy tenders (WLB and WLM)
- ♦ 43 inland, river, and construction buoy tenders (WLI, WLR, WLIC)
- ◆ 25 tugs (WTGB, WYTM, and WYTL)
- ◆ 1 officer training ship (WIX)
- 2 reserve training ship (WTR)
- approximately 2,000 small boats under 20 m length

AVIATION

As of 1-4-85, the Coast Guard had 65 fixed-wing aircraft, which included:

- 23 HC-130 Hercules long-range search-and-rescue aircraft (2 HC-130B, 1 HC-130E, 20 HC-130H)
- 41 HU-25 Guardian patrol aircraft
- 1 Grumman VC-4A Gulfstream-I as a personnel transport
- 1 Grumman VC-11A Gulfstream-II as a personnel transport
- Helicopters in use included:
 - 4 HH-65A Dolphin for rescue duties (with 86 to follow) (22 delivered by 1-86)
- 31 HH-3F Pelican for rescue duties (with 6 more in storage)
 - 64 HH-52A Sea Guard for rescue duties (with 1 more in storaga)

In 6-79, ninety Aérospatiale SA-366N SRR (Short-Range Recovery) helicopters were ordered from France under the USCG designation HH-65A Dolphin; these will replace the HH-52A helicopters. The first HH-65A Dolphin was to deliver in 9-82, with all 90 to be in service by early 1986, but the first was not accepted until 19-11-84; deliveries were to take place at 1/month into 1985, then rise to 2/month.

Although chronically short of funding, the Coast Guard is studying the acquisition of up to 40 HH-60 Seahawk helicopters to replace the HH-3F Pelican; these would be for land-based service and would have manually folding rotor blades. Additional NC-130H long-range SAR aircraft are programmed, and a non-rigid airship is to be leased for trials. Five additional HC-130H approved under FY 86.



HU-25A Guardian

Aerojet General, 1983



USCG HC-130H-7

Lockheed



USCG HH-52A Sea Guard

USCG

PRINCIPAL U.S. COAST GUARD AIRCRAFT

| FRINCIPAL C.S. COAST GUARD AIRCRAFT | | | | | | | | | |
|---|--|-------------------------|--------------------------|----------------|--|---|---|--------------------|--|
| Class, builder | Mission | Wingspan in m | Length in m | Height in m | Weight in kg | Engines | Max speed knots | Ceiling in feet | Radius (nautical miles) |
| FIXED-WING HC-130 B/E/H ¹ Hercules (Lockheed) | SAR/cargo/personnel transport (Dates apply to HC-130H) | 40.42 | 29.80 | 11.66 | 33,397 empty, 49,780 loaded, 70,300 max. | 4 Allison T 56-A-15 turboprops; 4,508 shp (4,061 sust.) each | 302 kts (287 cruise) | 25,000 | 3,734 ferry, 2,517 with max. payloa at 5,000 ft. |
| HU-25 ² Guardian (Dassault/ Grumman) | SAR | 16.30 | 17.15 | 5.32 | 8,618 empty 9,476 loaded; 14,515 max. | 2 Garrett AiResearch ATF3-6-2C turbofans; 2,512 kg thrust each | 461 kts (40,000 ft); 150 kts (search) | 40,000 | 2,250 SAR |
| HELICOPTERS: | Mission | Rotor di- ameter (m) | Length overall (m) | Height in m | Weight in kg | Engines | Max speed in knots | Ceiling in feet | |
| HH-3F Pelican (Sikorsky) | SAR/ transport | 18.90 | 22.25 | 5.51 | 10,000 max. | 2 G.E. T58-GE-5 turboshafts; 1,500 shp each | 141 kts (109 cruise) | 11,400 | 400 |
| HH-52A Sea Guard (Sikorsky) | SAR | 16.17 | 13.87 | 4.88 | 2,306 empty; 3,674 max. | 1 G.E. T58-GE-8B turboshaft; 1,250 shp | 95 kts (85 cruise) | 11,200 | 475 ferry, 150 SAR radius |
| HH-65A Dolphin (Aérospatiale) | SAR | 11.94 | 11.43 | 3.99 | 1,900 empty; 3,992 max. | 2 Avco Lycoming LTS 101-750A-1 ³ turboshafts; 680 hp each (646 sust.) | 175 kts (145 cruise; 128 SAR) | 7,150 | 420 ferry (4.1 hr mission) |

¹ Five HC-130H delivered 1984 with T56-A-7 engines; 4 delivered 1985 with T56-A-15 turboprops and provision for APS-134 radar.

² Trials 1983-84 with Aerojet General "Aireye" Surveillance System: APA-131 Side-looking radar (SLAR), Low-light tv (LLTV), RS-18C infrared/ultraviolet linescanner, KS-87B camera.

³ Later units may receive uprated LTS 101-750A-3 engines.

AVIATION (continued)



HH-65A Dolphin

USCG



USCG HH-3F Pelican

USCG

HIGH-ENDURANCE CUTTERS

| ◆ 12 Hamilton class (378-ft class) | | Bldr: Avondale SY, We | | |
|------------------------------------|-----------|-----------------------|----------|--|
| | Laid down | L | In serv. | |
| WHEC 715 Hamilton | 1-65 | 18-12-65 | 20-2-67 | |
| WHEC 716 DALLAS | 7-2-66 | 1-10-66 | 1-10-67 | |
| WHEC 717 MELLON | 25-7-66 | 11-2-67 | 22-12-67 | |
| WHEC 718 CHASE | 15-10-66 | 20-5-67 | 1-3-68 | |
| WHEC 719 BOUTWELL | 12-12-66 | 17-6-67 | 14-6-68 | |
| WHEC 720 SHERMAN | 13-2-67 | 23-9-67 | 23-8-68 | |
| WHEC 721 GALLATIN | 17-4-67 | 18-11-67 | 20-12-68 | |
| WHEC 722 Morgenthau | 17-7-67 | 10-2-68 | 14-2-69 | |
| WHEC 723 Rush | 23-10-67 | 16-11-68 | 3-7-69 | |
| WHEC 724 Munro | 18-2-70 | 5-12-70 | 10-9-71 | |
| WHEC 725 Jarvis | 9-9-70 | 24-4-71 | 30-12-71 | |
| WHEC 726 MIDGETT | 5-4-71 | 4-9-71 | 17-3-72 | |

D: 2,716 tons (3,050 fl) S: 29 kts

Dim: 115.37 (106.68 pp) × 13.06 × 4.27 (6.2 over sonar)

A: 1/127-mm 38-cal. DP -2/20-mm AA (I \times 2) -4/12.7-mm mg (I \times 4) -2/40-mm Mk 64 grenade launchers (I \times 2) -6/324-mm Mk 32 ASW TT (III \times 2)

Electron Equipt: Radar: 2/SPS-64(V)6 navigational surface-search, 1/SPS-29D air-search, 1/Mk 35

Sonar: SQS-38 - EW: WLR-1, WLR-3



Chase (WHEC 718)

L. & L. Van Ginderen, 6-84



Gallatin (WHEC 721) - EW van on helicopter deck L. & L. Van Ginderen, 6-83



Munro (WHEC 724)

U.S. Navy, 9-83

M: CODOG: 2 Fairbanks-Morse 38TD8¼, 12-cyl. diesels, 3,500 hp each; 2 Pratt & Whitney FT4-A6 gas turbines, 18,000 hp each; 2 CP props; 36,000 hp — 350-hp retractable bow propeller

Electric: 1,500 kw Fuel: 800 tons

Range: 2,400/29; 9,600/19 (gas turbines); 14,000/11 (diesel)

Endurance: 45 days Man: 15 officers, 140 men

Remarks: Helicopter platform, 26.82 × 12.2. Living spaces air-conditioned. Laboratories for weather and oceanographic research. Welded hull; aluminum superstructure. Named after early Secretaries of the Treasury and Coast Guard heroes. Thirty-six planned, only twelve built. Mk 56 radar gunfire-control director and Mk 309 ASW fire-control system installed. For FY 85 through FY 88, modernizations will include: replacing the 127-mm gun and Mk 56 gunfire-control system with a 76-mm Mk 76 (OTO Melara Compact) gun and Mk 92 radar gunfire-control system, replacing the SPS-29D radar with SPS-40B, replacing the WLR-1 EW system with SLQ-32 and the Mk 36 SRBOC chaff system, and adding satellite communications gear; provision will be made to carry the LAMPS-I ASW helicopter and one 20-mm Mk 15 CIWS gatling AA gun. Eight are to be modified by Todd SY, Seattle, and the others by Bath Iron Works, Maine; the first ship was to enter the yards in 10-85 for delivery spring 1987, and the last will complete by 3-90. The grenade launchers have replaced the 81-mm mortars formerly carried. The helicopter hangars have been blanked off. SQS-38 is a hull-mounted version of the Navy's SQS-35 variable-depth sonar. WHEC 716-723 have synchronizing clutches; the final three have synchro-self-shifting (SSS) clutches.

• 2 Secretary class (327-ft class)

| | Bldr | Laid down | L | In serv. |
|----------------|------------------|-----------|--------|----------|
| WHEC 35 INGHAM | Philadelphia NSY | 1-5-35 | 3-6-36 | 6-11-36 |
| WHEC 37 TANEY | Philadelphia NSY | 1-5-35 | 3-6-36 | 24-10-36 |



Taney (WHEC 37) - extra deckhouse atop bridge

French Navy, 6-81

D: 2,397 tons (2,656 fl) S: 19.8 kts Dim: 99.67 (93.88 wl) \times 12.55 \times 4.57 A: 1/127-mm 38-cal. DP — 2/12.7-mm mg (I \times 2) — 2/40-mm Mk 64 grenade launchers (I \times 2)

Electron Equipt: Radar: 1/SPS-64(V)1, 1/SPS-64(V)6

HIGH-ENDURANCE CUTTERS (continued)

M: 2 sets Westinghouse GT; 2 props; 6,200 hp

Boilers: 2 Babcock & Wilcox; 28.2 kg/cm² Fuel: 572 tons Range: 4,000/19.8; 8,000/10.5 Man: 13 officers, 124 men

Remarks: Despite great age, comfortable and highly reliable ships. WHEC 37 is the last active survivor of the 7-12-41 Pearl Harbor attack. Has a weather balloon inflation hangar just abaft the stack. All gunfire-control and ASW equipment removed, and SPS-29D air-search radars removed 1981-82. WSR-S1 weather removed from WHEC 37 in 1980. Sister Spencer (WHEC 36) was sold late 1981; Campbell (WHEC 32) stricken 1-4-82; Bibb (WHEC 31) stricken 30-7-85; Duane (WHEC 33) stricken 1-8-85; Ingham (WHEC 35) was scheduled to strike 12-85, but remained in service into 1-86. Taney scheduled to strike 5-86 after nearly 50 years' service.

• 1 Casco class (311-ft class)

Bldr: Associated SB, Seattle

WHEC 379 UNIMAK (ex-WTR, ex-WHEC, 12-2-42 27-5-43 31-12-43 ex-AVP 31)



Unimak (WHEC 379)

L. & L. Van Ginderen, 6-81

D: 1,766 tons (2,505 fl) S: 17 kts Dim: 94.7 (91.5 pp) × 12.52 × 3.65

A: 1/127-mm 38-cal. DP — 4/12.7-mm mg (I \times 4) — 2/40-mm Mk 64 grenade launchers (I \times 2)

Electron Equipt: Radar: 1/SPS-64(V)1, 1/SPS-64(V)6

M: 4 Fairbanks-Morse 38D8% diesels; 2 props; 6,080 hp Electric: 600 kw Fuel: 400 tons Range: 8,000/17; 20,000/10 Man: 12 officers, 77 men

Remarks: The last of a series of small seaplane tenders (AVP), eighteen of which were transferred to the Coast Guard, 1947-48; seven were given to South Vietnam beginning in 1970, and eight have been taken out of service since 1968. WHEC 379 was a training ship from 11-69 until placed in reserve on 30-5-75. She was recommissioned on 15-8-77 for patrol duties in the 200-nautical-mile economic zone. Gunfire-control and ASW systems have been removed. Likely to be decommissioned during 1986.

MEDIUM-ENDURANCE CUTTERS

5 (+8) Bear class (270-ft class)
 Bldr: WMEC 901-904: Tacoma Boatbuilding, Tacoma, Wash.; WMEC 905-913: Robert E. Direcktor, Middletown, Rhode Isl.

| | Laid down | L | In serv. |
|--------------------------------|-----------|---------|----------|
| WMEC 901 BEAR | 23-8-79 | 25-9-80 | 4-2-83 |
| WMEC 902 TAMPA | 3-4-80 | 19-3-81 | 16-3-84 |
| WMEC 903 HARRIET LANE | 15-10-80 | 6-2-82 | 20-9-84 |
| WMEC 904 NORTHLAND | 9-4-81 | 7-5-82 | 17-12-84 |
| WMEC 905 Spencer (ex-Seneca) | 26-6-82 | 17-4-84 | 23-12-85 |
| WMEC 906 SENECA (ex-Pickering) | 16-9-82 | 17-4-84 | 5-86 |
| WMEC 907 ESCANABA | 1-4-83 | 6-2-85 | 9-86 |
| WMEC 908 TAHOMA (ex-Legare) | 28-6-83 | 6-2-85 | 1-87 |
| WMEC 909 CAMPBELL (ex-Argus) | 10-8-84 | 11-85 | 5-87 |
| WMEC 910 THETIS (ex-Tahoma) | 24-8-84 | 11-85 | 9-87 |
| WMEC 911 FORWARD (ex-Erie) | 1-86 | 6-86 | 1-88 |
| WMEC 912 Legare (ex-McCulloch) | 1-86 | 6-86 | 5-88 |
| WMEC 913 Mohawk (ex-Ewing) | 2-86 | 1-87 | 9-88 |

Authorized: 2 in FY 77, 2 in FY 78, in FY 79, 3 in FY 80, 1 in FY 81, 3 in FY 82.

D: 1,200 tons light (1.780 ft) S: 19.5 kts Dim: 82.3 (77.7 wt) × 11.58 × 4.11

A: 1/76-mm Mk 75 DP — 2/12.7-mm mg (I \times 2) — 2/40-mm Mk 19 grenade launchers (I \times 2) — 1/HH-52A or HH-65A helicopter

Electron Equipt: Radar: 1/SPS-64(V)1, 1/SPS-64(V)6, 1/Mk 92 fire-control Sonar: Provision for SQR-19A TASS

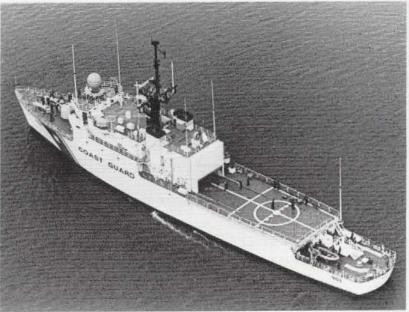
EW: SLQ-32(V)1, Mk 36 SRBOC chaff RL (VI \times 2) TACAN: URN-25

M: 2 Alco Model 251, 18-cyl. diesels; 2 CP props; 7,000 hp Electric: 1,350 kw Range: 4,080/18.5; 7,680/15; 10,250/12 Man: 11 officers, 89 men



Bear (WHEC 901) — hangar extended

USCG, 3-83



Bear (WMEC 901) - hangar retracted

USCG, 3-83



Northland (WMEC 904)

G. Arra, 12-85

Remarks: Names have been altered since original listing. Program has suffered numerous delays; first ship was to have completed 31-12-80. WMEC 905-913 originally ordered from Tacoma in 8-80, but lawsuit caused reassignment to R.E. Direcktor, 17-1-81. The latter initially lacked the facilities to build the ships. Intended to be able to act as ASW escorts in wartime. No hull-mounted sonar or on-board ASW weapons. Space and weight reserved for Mk 15 CIWS 20-mm gatling AA gun and two quadruple Harpoon missile-launch canisters. Satellite-communications system will be carried. Can carry van-mounted towed passive sonar array on fantail. Telescoping hangar, provision for fin stabilization. Have six light weapons mountings capable of accepting 12.7-mm mg or 40-mm Mk 19 grenade launchers. Reportedly overloaded and very uncomfortable ships in a seaway; 76-mm gun raised .76 m to reduce damage. Have accommodations for up to 17 officers, 123 men.

♦ 16 Reliance class (210-ft A* and 210-ft B class)

| | Bldr | L | In serv. |
|----------------------|------|----------|----------|
| WTR 615 RELIANCE* | 1 | 25-5-63 | 20-6-24 |
| WMEC 616 DILIGENCE* | 1 | 20-7-63 | 26-8-64 |
| WMEC 617 VIGILANT* | 1 | 24-12-63 | 3-10-64 |
| . WMEC 618 ACTIVE* | 2 | 31-7-65 | 17-9-66 |
| WMEC 619 CONFIDENCE* | 3 | 8-5-65 | 19-2-66 |
| WMEC 620 RESOLUTE | 3 | 30-4-66 | 8-12-66 |
| WMEC 621 VALIANT | 4 | 14-1-67 | 28-10-67 |
| WMEC 622 Courageous | 4 | 18-5-67 | 10-4-68 |

MEDIUM-ENDURANCE CUTTERS (continued)

| WMEC 623 STEADFAST | 4 | 24-6-67 | 25-9-68 |
|---------------------|---|----------|----------|
| WMEC 624 DAUNTLESS | 4 | 21-10-67 | 10-6-68 |
| WMEC 625 Venturous | 4 | 11-11-67 | 16-8-68 |
| WMEC 626 DEPENDABLE | 4 | 16-3-68 | 27-11-68 |
| WMEC 627 Vigorous | 4 | 4-5-68 | 2-5-69 |
| WMEC 628 DURABLE | 3 | 29-4-67 | 8-12-67 |
| WMEC 629 Decisive | 3 | 14-12-67 | 23-8-68 |
| WMEC 630 ALERT | 3 | 19-10-68 | 4-8-69 |

Bldrs: 1. Todd Shipyards—2. Christy Corp., Sturgeon Bay, Wis.—3. Coast Guard SY, Curtis Bay, Md.—4. American SB, Lorain, Ohio.



Diligence (WTR 616)

L. & L. Van Ginderen, 1-84



Resolute (WMEC 620)

G. Arra, 8-85

D: 759 tons (993* or 1,007 fl) **S:** 18 kts **Dim:** 64.16 (60.96 pp) \times 10.36 \times 3.2 **A:** 1/76.2-mm Mk 22 DP — 4/12.7-mm mg (I \times 4) — 2/40-mm Mk 64 grenade launchers (I \times 2) — 1/HH-52A helicopter

Electron Equipt: Radar: 2/SPS-64(V)1 Endurance: 21 days

M: 2 Alco 251B 16-cyl. diesels, 2,500 hp each; 2 CP props; (WTR 615 to WMEC 619: 2 Cooper-Bessemer FVBM12-T diesels, 1,500 hp each; 2 CP props; 3,000 hp
 Electric: 500 kw Range: 2,700/18; 6,100/14 (*2,100/18; 6,100/13)
 Man: 8 officers, 54 men

Remarks: WTR 615 replaced WHEC 379 as reserve training cutter in 1974; she retains full WMEC capabilities. No hangar. Designed to operate up to 500 miles off the coast. High superstructure permits 360-degree visibility. Can tow a 10,000-ton ship. Airconditioned.

WTR 615 – WMEC 619 originally had CODAG propulsion, with two Solar Saturn T-100s gas turbines providing an additional 2,000 hp; the turbines have been removed. These five ships are being re-engined and otherwise updated by the U.S. Coast Guard Yard, Curtis Bay with Alco 251B engines like their sisters. The remaining ships are to be refitted by private yards beginning in 3-86. Crews are to be enlarged to 86 total, provisions capacities enlarged, and exhausts are to be rearranged; displacements will rise to over 1,300 tons on completion.

♦ 3 Diver class (213-ft class) Bldr: Basalt Rock Co., Napa, Calif.

| | Laid down | L | In serv. |
|---|-----------|----------|----------|
| WMEC 6 ESCAPE (ex-ARS 6) | 24-8-42 | 22-11-42 | 20-11-43 |
| WMEC 167 ACUSHNET (ex-WAGO 167, ex-WAT 167, ex-Shackle, ARS 9) | 26-10-42 | 1-4-43 | 6-2-44 |
| WMEC 168 YOCONA (ex-WAT 168, ex-Seize, ARS 26) | 28-9-43 | 8-4-44 | 3-11-44 |

D: 1,246 tons (1,745 fl) S: 15.5 kts Dim: 65.08 (63.09 wl) × 12.5 × 4.57 A: None Electron Equipt: Radar: 2/SPS-64(V)1 Electric: 460 kw M: 4 Cooper-Bessemer GSB-8 diesels, electric drive; 2 props; 3,000 hp Fuel: 300 tons Range: 9,000/15.5; 20,000/7 Man: 7 officers, 65 men

Remarks: Former salvage ships; WMEC 167, 168 taken over from the Navy in 1946. WMEC 167 served as WAGO 167 from 1968 to 1978, then retyped WMEC. WMEC 6, reactivated from reserve and transferred on loan from U.S. Navy 4-12-80, has a mainmast. Maximum sustained speed is 13 kts.



Escape (WMEC 6)

G. Arra, 8-85

◆ 1 Storis class (230-ft class) Bldr; Toledo SB, Toledo, Ohio

Laid down L In serv.

WMEC 38 Storis (ex-Eskimo) 14-7-41 4-4-42 30-9-42



Storis (WMEC 38)

1971

D: 1,296 tons light (1,916 fl) S: 14 kts Dim: $70.1 \times 13.1 \times 4.6$ A: 1/76.2-mm Mk 22 DP — 4/12.7-mm mg (I × 4)

Electron Equipt: Radar: 2/SPS-64

M: 3 Fairbanks-Morse 38D8 diesels, electric drive; 1 prop; 1,800 hp Fuel: 330 tons Range: 12,000/14; 22,000/8 Man: 10 officers, 96 men

Remarks: Rated as WAG until 1966, and WAGB until 1-7-72, when she was retyped WMEC. Resembles a *Balsam*-class buoy tender, but is larger. Has an icebreaker hull, but is no longer considered capable of acting as such. Based at Kodiak, Alaska.

♦ 5 Cherokee and Achomawi* class (205-ft class)

| | Bldr | Laid down | L | In serv. |
|---------------------------------------|--|-----------|----------|----------|
| WMEC 76 UTE (ex-T-ATF 76) | United Eng., Alameda | 27-2-42 | 24-6-42 | 31-12-42 |
| WMEC 85 LIPAN (ex-T-ATF 85) | United Eng., Alameda | 30-5-42 | 17-9-42 | 29-4-43 |
| WMEC 153 CHILULA* (ex-ATF 153) | Charleston SB | 13-7-44 | 1-12-44 | 5-4-45 |
| WMEC 165 CHEROKEE (ex-ATF 66) | Bethlehem, Staten I. | 23-12-38 | 10-11-39 | 26-4-40 |
| WMEC 166 Tamaroa (ex-Zuni, ATF 95) | Commercial Iron Works, Portland, Oregon | 8-3-43 | 13-7-43 | 9-10-43 |

D: 1,217 tons (1,731 ft) S: 16.2 kts Dim: 62.48 (59.44 pp) × 11.73 × 5.18 A: 1/76.2-mm Mk 22 DP Electron Equipt: Radar: 2/SPS-64

M: 4 G.M. 12-278 diesels, electric drive; 1 prop; 3,000 hp Electric: 260 kw Fuel: 315 tons Range: 6,500/16.2; 15,000/8 Man: 6 office: s, 65 men

Remarks: WMEC 165 and WMEC 166 were the first and last of the numerous group to be built; WMEC 153 is one of a later version that has similar appearance, but her diesels are G.M. 12-278A. WMEC 153, 165, and 166 are former U.S. Navy fleet tugs loaned to the Coast Guard in 1946 and transferred outright on 1-6-69; WMEC 76 and 85 were transferred on 30-9-80 and then towed from San Francisco to Curtis Bay, Md., for refits; they have no 76.2-mm guns. WMEC 76, 85 refitted 12-84 to 7-85 by Atlantic Dry Dock, Ft. George, Florida.

MEDIUM-ENDURANCE CUTTERS (continued)



Tamaroa (WMEC 166)

J. Jedrlinic, 1982

♦ 3 Balsam class (180-ft.) former seagoing buoy tenders Bldr: Marine Iron & SB, Duluth, Minn.

WMEC 292 CLOVER (ex-WLB 292) Laid down L In serv.
WMEC 295 EVERGREEN (ex-WAGO 295, ex-WLB 295) 15-4-42 3-7-42 30-4-43
WMEC 300 CITRUS (ex-WLB 300) 29-4-42 15-8-42 30-5-43



Evergreen (WMEC 295)

G. Arra, 6-85



Citrus (WMEC 300)

F. Zeitlhofer, 7-85

Remarks: WMEC 292 reclassified 6-79 to replace *Modoc* (WMEC 194), and WMEC 300 reclassified 2-80 to replace *Comanche* (WMEC 202). Data as for buoy tender sisters on later page. WMEC 300, stationed at Coos Bay, Oregon, has had her hull strengthened for icebreaking. WMEC 292 based at Eureka, Cal. WMEC 295, converted as an oceanographic research ship and redesignated WAEC 295 to 2-73, was redesignated WMEC 295 on 1-5-83. Armament for all is 2/40-mm grenade launchers (I × 2) and 2/12.7-mm mg. All three were proposed for decommissioning in 1982 but remain in service.

ICEBREAKERS

♦ 0 (+2) new-construction polar icebreakers

Remarks: Congress authorized commencement of studies for a new polar icebreaker class to replace WAGB 281 and 282 in FY 85. Construction funding to be requested in FY 88. A third is desired. Will be 15,000 tons (fl), 137.16 m o.a.

• 2 Polar Star class (399-ft class)

Bldr: Lockheed SB, Seattle

WAGB 10 POLAR STAR 15-5-72 17-11-73 19-1-76 WAGB 11 POLAR SEA 27-11-73 24-6-75 23-2-78

D: 10,430 tons (13,190 fl) S: 18 kts Dim: 121.91 (102.78 pp) × 25.45 × 1.14 Electron Equipt: Radar: 2/SPS-64 — TACAN: SRN-15



Polar Star (WAGB 10)

L. & L. Van Ginderer, 1983



Polar Star (WAGB 10)

G. Arra, 11-85

M: CODAG: 6 Alco 16V251 diesels, 3,000 hp each; 3 Pratt & Whitney FT-4A12 gas turbines, 25,000 hp each, down-rated; electric drive; 3 CP props; 66,000 hp Fuel: 3,555 tons Range: 16,000/18; 28,275/13

Man: 13 officers, 125 men, 10 scientists, 15 helicopter detachment

Remarks: No additional units planned. Carry two HH-52A helicopters, painted red. Can break 2-meter ice at 3 knots, 6.4-meter ice maximum. Propulsion plant completely cross-connected and automatic. Two 15-ton cranes. Four 20-mm AA (! × 4) and two 40-mm Mk 64 grenade launchers (I × 2) can be installed. Both home-Forted at Seattle.

♦ 1 Glacier class (310-ft class)

Bldr: Ingalls SB, Pascagoula, Miss.

WAGB 4 GLACIER 3-8

Laid down 3-8-53

L In serv. 27-8-54 27-5-55



Glacier (WAGB 4) - SPS-6 radar since removed

1972

D: 6,406 tons (8,775 fl)
 S: 17.6 kts
 Dim: 94.5 (88.4 pp) × 22.6 × 8.8
 A: 2/40-mm Mk 64 grenade launchers (I × 2) 2/12.7-mm mg — 2/HH-52A helicopters

Electron Equipt: Radar: 2/SPS-64

M: Diesel-electric propulsion; 10 Fairbanks-Morse 38D8¼ diesels and 2 Westinghouse electric motor-generators; 21,000 hp

ICEBREAKERS (continued)

Range: 12,000/17.6; 29,000/12 Man: 14 officers, 183 men

Remarks: Built for the U.S. Navy and transferred to the Coast Guard on 1-7-66. Two 12.5-ton cranes. Based at Long Beach, Cal. Originally had 2/127-mm (I × 2) and 6/76.2-mm (II × 3) guns. Was to have been stricken in 1992 but may be modernized and retained.

• 2 Wind class (269-ft class)

Bldr: Western Pipe & Steel, San Pedro, Calif.

WAGB 281 WESTWIND (ex-AGB 6, ex-Severniy Polyus) WAGB 282 NORTHWIND

Laid down L In serv. 24-8-42 31-3-43 18-9-44 10-7-44 22-2-45 28-7-45



Northwind (WAGB 282)

H. Serig, 7-84

D: 3,500 tons (6,515 fl) S: 16 kts Dim: 81.99 (76.2 pp) × 19.36 × 8.84 Electron Equipt: Radar: 2/SPS-64

M: 4 Enterprise diesels, electric drive; 2 props; 10,000 hp Fuel: 2,200 tons Electric: 400 kw Range: 16,000/16; 38,000/10.5 Man: 14 officers, 100 men

Remarks: Can make way in 2.7-m ice. Double hull entirely welded. Telescoping hangar for one HH-52A helicopter. Both reengined 1973-75. Two 12.5-ton cranes. WAGB 281 was in the Soviet Navy from 31-3-45 to 6-12-51.

WAGB 281, damaged by ice in 1984, is laid up at Mobile, Ala., awaiting repair funding. WAGB 282, which is based at Wilmington, North Carolina, is to be refitted under FY 86.

1 Mackinaw class (290-ft class)

Bldr: Toledo SB, Toledo, Ohio

WAGB 83 Mackinaw (ex-Manitowoc)

Laid down L In serv. 20-3-43 4-3-44 20-12-44



Mackinaw (WAGB 83)

USCG, . . .

D: 3,049 tons (5,252 fl) **S:** 18.7 kts **Dim:** $88.39 \times 22.66 \times 5.79$

Electron Equipt: Radar: 2/SPS-64 Electric: 1,260 kw

M: 4 Fairbanks-Morse 38D8¼ diesels, electric drive; 3 props (2 aft, 1 fwd); 10,000 hp Range: 10,000/18.7; 41,000/9 Man: 10 officers, 97 men

Remarks: Built for use on the Great Lakes. Helicopter platform. Fitted with two 12-ton cranes. Can break 1.2-m solid ice. Overhauled 1982 at Bay SB, Sturgeon Bay, Wisc.; cranes aft removed and some fuel tankage converted to ballast tanks.

PATROL BOATS

♦ 0 (+0+. . .) SWATH design



SWATH Patrol Boat

USCG, 1985

D: 600 tons (fl) S: 20 kts Dim: 42.4 × 18.3 × 4.4

A: 2/12.7-mm mg (I \times 2) -2/40-mm Mk 19 grenade launchers

Electron Equipt: Radar: 1/SPS-64

M: 2 diesels; 2 CP props; approx. 8,000 hp Range: 3,300/12-14

Endurance: 10 days Man: 30 tot.

Remarks: Design effort commenced 12-82 for a SWATH (Small Waterplane Area, Twin Hull) patrol boat now planned to be ordered under FY 86. A larger, oceangoing SWATH program has been shelved. The lower pontoon hulls will be 36.5-m long, with a 3.0 m diameter. The helicopter deck will accommodate an HH-65A Dolphin. There will be fin pitch and role stabilizers.

 3 (+13) "Island" (110-ft) class port, Louisiana Bldr: Bollinger Machine Ship & SY, Lock-

| | In serv. | | In serv. |
|--------------------|----------|--------------------|----------|
| WPB 1301 FARALLON | 21-2-86 | WPB 1309 AQUIDNECK | 1986 |
| WPB 1302 Manitou | 28-2-86 | WPB 1310 Mustang | 1986 |
| WPB 1303 MATAGORDA | 3-86 | WPB 1311 Naushon | 1986 |
| WPB 1304 Maui | 4-86 | WPB 1312 SANIBEL | 1986 |
| WPB 1305 Monhegan | 1986 | WPB 1313 Edisto | 1987 |
| WPB 1306 Nunivak | 1986 | WPB 1314 SAPELO | 1987 |
| WPB 1307 OCRACOKE | 1986 | WPB 1315 MATINICUS | 1987 |
| WPB 1308 Vashon | 1986 | WPB 1316 NANTUCKET | 1987 |
| | | | - |



Farallon (WPB 1301)

Bollinger, 9-85



Farallon (WPB 1301)

USCG, 9-85

PATROL BOATS (continued)

D: 136 tons normal (161 fl) S: 29.7 kts Dim: 33.53 × 6.40 × 2.23

A: 1/20-mm AA - 2/40-mm Mk 19 grenade launchers

Electron Equipt: Radar: 1/SPS-64(V)

M: 2 Paxman Valenta 16 RP200 CM diesels; 2 props; 5,760 hp

Electric: 198 kw Range: 1,882 nm (26 kts × 24 hrs + 13.1 kts × 96 hrs)

Man: 2 officers, 2 CPO, 12 men

REMARKS: Fifteen ordered 8-84; 16th ordered 3-5-85 in place of earlier winner Marine Power & Equipment, Seattle, Washington, whose contract was successfully contested by Bollinger. Modified Vosper-Thornycroft design, with increased tophamper. Steel hull, aluminum deck and superstructure. Fin stabilizers fitted. Carry LORAN-C and Omega receivers, IFF transponder, and SQN-18 echo-sounder. Engines governor-limited to 2,880 hp each from nominal max. 4,000 hp. First delivered 23-8-85 for trials; others were to follow at 45-day intervals. Sixteen additional patrol boats authorized under FY 86.

♦ 3 Bell 110 surface-effect patrol boats

Bldr: Bell-Halter, Inc., New Orleans

WSES 2 SEA HAWK (In serv. 16-10-82) WSES 3 SHEARWATER (In serv. 16-10-82) WSES 3 Petrel (In serv. 18-6-83)



Sea Hawk (WSES 2) and Shearwater (WSES 3)

Bell Aerospace, 10-82

D: 110 tons (160 fl) S: 35 kts (designed; now make about 18 kts) Dim: $33.53 \times 11.89 \times 2.36$ at rest/1.37 on cushion Man: 2 officers, 16 men

A: 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 2/Decca 914

M: 2 G.M. 16V149 TI diesels for propulsion; 2 CP props; 3,200 hp; 2 G.M. 8V92

TI diesels for lift; 2 certrifugal; 990 hp

Electric: 60 kw Range: 300-500/35; 1,500/23 on cushion

Remarks: Ordered 6-82 after the very successful trials with Dorado (WSES 1), now in U.S. Navy service. Rigid sidewall design, with rubber seal bags fore and aft. Aluminum construction. Based at Key West on anti-drug patrol and intercept duties. Extra equipment has greatly lowered performance; vibration problems have caused redesign of skirt vents.

PATROL CRAFT

♦ 22 95-ft Cape class

WPB 95300 CAPE SMALL WPB 95302 CAPE HIGGON WPB 95303 CAPE UPRIGHT WPB 95304 CAPE GULL WPB 95305 CAPE HATTERAS WPB 95306 CAPE GEORGE WPB 95307 CAPE CURRENT WPB 95309 CAPE CARTER WPB 95310 CAPE WASH WPB 95311 CAPE HEDGE WPB 95312 CAPE KNOX

Bldr: Coast Guard Yard, Curtis Bay, Md., 1953-59

WPB 95313 CAPE MORGAN WPB 93516 CAPE FOX WPB 95317 CAPE JELLISON WPB 95319 CAPE ROMAIN WPB 95320 CAPE STARR WPB 95321 Cape Cross WPB 95322 Cape Horn

WPB 95324 CAPE SHOALWATER WPB 95326 CAPE CORWIN

WPB 95328 CAPE HENLOPEN

WPB 95332 Cape York



Cape Corwin (WPB 95326)

USCG, 1983

D: 83 tons (105 fl) S: 18 kts (cruising, fl) Dim: 28.96 × 6.1 × 1.55 A: 2/12.7-mm mg(I \times 2) -2/40-mm Mk 64 grenade launchers (I \times 2) Electron Equipt: Radar: 1/SPS-64(V)1 Electric: 40 kw

M: 4 Cummins VT-12-M-700 diesels; 2 props; 2,324 hp Endurance: 5 days Range: WPB 95300 to WPB 95311: 460/20; 2,600/9; WPB 95312 to WPB 95320: 460/20; 3,000/9; WPB 95321 to WPB 95332: 500/20; 2,800/9

Remarks: Two transferred to Haiti (1956), two to Ethiopia (1958), four to Thailand, and one to Saudi Arabia. Nine were given to South Korea (1969-70). Several others have been scrapped. The survivors were reengined and rehabilitated, 1977-81, in lieu of building thirty new WPBs. Sister Cape Coral (WPB 95301) stricken 6-6-83, Cape Strait (WPB 95308) in 1-83, Cape Newhagen (WPB 95318) in 9-82, and Cape Fairweather (WPB 95314) 4-3-85.

Bldr: Coast Guard Yard, Curtis Bay, Md. (except WPB • 53 83-ft Point Class 82345 to WPB 83249: J. Martinac SB, Tacoma, Wash.)

In serv: WPB 82302 to WPB 82314: 1960-61; WPB 82318 to WPH 82370: 1961-67; WPB 82371 to WPB 82379: 1970

WPB 82302 POINT HOPE WPB 82311 POINT VERDE WPB 82312 POINT SWIFT WPB 82314 POINT THATCHER WPB 82318 Point Herron WPB 82332 POINT ROBERTS WPB 82333 POINT HIGHLAND WPB 82334 POINT LEDGE WPB 82335 POINT COUNTESS WPB 82336 Point Glass WPB 82337 POINT DIVIDE WPB 82338 Point Bridge WPB 82339 Point Chico WPB 82340 POINT BATAN WPB 82341 Point Lookout WPB 82342 POINT BAKER WPB 82343 POINT WELLS WPB 82344 POINT ESTERO WPB 82345 POINT JUDITH WPB 82346 POINT ARENA WPB 82347 POINT BONITA WPB 82348 Point Barrow WPB 82349 Point Spencer WPB 82350 POINT FRANKLIN WPB 82351 POINT BENNETT WPB 82352 POINT SAL WPB 82353 POINT MONROE

WPB 82354 POINT EVANS WPB 82355 POINT HANNON WPB 82356 POINT FRANCIS WPB 82357 POINT HURON WPB 82358 POINT STUART WPB 82359 POINT STEELE WPB 82360 Point Winslow WPB 82361 POINT CHARLES WPB 82362 Point Brown WPB 82363 POINT NOWELL WPB 82364 Point Whitehorn WPB 82365 POINT TURNER WPB 82366 POINT LOBOS WPB 82367 POINT KNOLL WPB 82368 POINT WARDE WPB 82369 POINT HEYER WPB 82370 Point Richmond WPB 82371 POINT BARNES WPB 82372 POINT BROWER WPB 82373 POINT CAMDEN WPB 82374 POINT CARREW WPB 82375 POINT DORAN WPB 82376 POINT HARRIS WPB 82377 POINT HOBART WPB 82378 POINT JACKSON WPB 82379 POINT MARTIN



Point Huron (WPB 82357)

L. & L. Van Ginderen, 6-83

D: 64 tons (66-69 fl) S: 23.7 kts (see Remarks) Dim: 25.3 × 5.23 × 1.95 A: 2/12.7-mm mg (I \times 2) -2/40-mm Mk 64 grenade launchers (I \times 2) Electron Equipt: Radar: 1/SPS-64(V)1

M: 2 Cummins VT-12-M diesels; 2 props; 1,690 hp Fuel: 5.7 tons Range: 460/23.7; 1,400-1,500/8-9 Man: 1 officer, 7 men

Remarks: Hull in mild steel. High-speed diesels controlled from the bridge. The heavier WPB 82371 and later make 22.6 knots, and have a range of 320/22.6; 1,200/8. WPB 82314 had two gas turbines with 1,000 hp (27-knot potential) and controllable-pitch propellers, but was reequipped with diesels. Well-equipped for salvage and towing. Beginning in 6-65, 26 others were sent to Vietnam; transferred 1969-70.

TRAINING CUTTER

• 1 Horst Wessel class

Bldr: Blohm + Voss, Hamburg, Germany

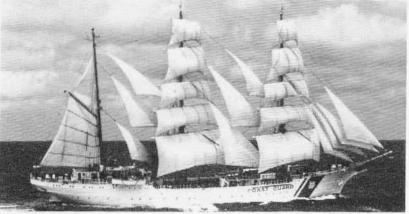
In serv. 13-6-36 1-46

WIX 327 EAGLE (ex-Horst Wessel)

D: 1,435 tons light (1,732 fl) S: 18 kts Dim: 89.9 (70.4 wl) × 11.9 × 5.2

Electron Equipt: Radar: 1/SPS-64(V)1 M: 1 Caterpillar D-399, V-16 diesel; 1 prop; 1,000 hp (10.5 kts); 2,355 m² sail area Electric: 450 kw Range: 5,450/7.5 (diesel)

Man: 19 officers, 46 men, 180 cadets



Eagle (WIX 327)

1977

Remarks: Training ship at the Coast Guard Academy, New London. Sisters operate in the Brazilian Navy and Soviet merchant marine. Re-engined and extensively overhauled at the U.S. Coast Guard Yard, Curtis Bay. Has 390 tons fixed ballast.

Note: Reliance: (WTR 615, ex-WMEC 615) acts as training cutter for Coast Guard reserve personnel. Four small training tenders, T1 through T4, are used at the Coast Guard Academy for navigational and maneuvering training.

BUOY TENDERS, SEAGOING

30 Balsam class
 Bldrs: WLB 297: U.S. Coast Guard Yard, Curtis, Bay, Md.;
 others: A: Marine Iron SB Co.; B: Duluth Iron & SB Co.; C: Zenith Dredge Co. — all of
 Duluth, Minn.

| | | Laid | | In |
|---------------------|------|----------|----------|----------|
| | Bldr | down | L | serv. |
| WLB 277 Cowslip* | A | 16-9-41 | 11-4-42 | 17-10-42 |
| WLB 290 GENTIAN* | В | 3-10-41 | 23-5-42 | 3-11-43 |
| WLB 291 LAUREL† | В | 17-4-42 | 4-8-42 | 24-11-42 |
| WLB 296 Sorrel* | В | 26-5-42 | 28-9-42 | 15-4-43 |
| WLB 297 Ironwood‡ | | 2-11-42 | 16-3-43 | 4-8-43 |
| WLB 301 CONIFER* | A | 6-7-42 | 3-11-42 | 1-7-43 |
| WLB 302 Madrona* | В | 6-7-42 | 11-11-42 | 30-5-43 |
| WLB 305 Mesquite‡ | A | 20-8-42 | 14-11-42 | 27-8-43 |
| WLB 306 Buttonwood† | A | 5-10-42 | 30-11-42 | 24-9-43 |
| WLB 307 PLANETREE† | A | 4-12-42 | 20-3-43 | 4-11-43 |
| WLB 308 PAPAWT | A | 16-11-42 | 19-2-43 | 12-10-43 |
| WLB 309 SWEETGUM | Α | 21-2-43 | 15-4-43 | 20-11-43 |
| WLB 388 Basswood† | A | 21-3-43 | 20-5-43 | 12-1-44 |
| WLB 389 BITTERSWEET | В | 16-9-43 | 11-11-43 | 11-5-44 |
| WLB 390 Blackhaw† | A | 16-4-43 | 18-6-43 | 17-2-44 |
| WLB 392 Bramble‡ | В | 2-8-43 | 23-10-43 | 22-4-44 |
| WLB 393 Firebrush | В | 12-11-43 | 3-2-44 | 20-7-44 |
| WLB 394 HORNBEAM‡ | A | 19-6-43 | 14-8-43 | 14-4-44 |
| WLB 395 Irist | В | 10-12-43 | 18-5-43 | 11-8-44 |
| WLB 396 Mallow† | В | 10-10-43 | 9-12-43 | 6-6-44 |
| WLB 397 Mariposa‡ | В | 25-10-43 | 14-1-44 | 1-7-44 |
| WLB 399 SAGEBRUSHT | В | 15-7-43 | 30-9-43 | 1-4-44 |
| WLB 400 SALVIA | В | 24-6-43 | 15-9-43 | 19-2-44 |
| WLB 401 Sassafras | A | 16-8-43 | 5-10-43 | 23-5-44 |
| WLB 402 Sedge‡ | A | 6-10-43 | 27-11-43 | 5-7-44 |
| WLB 403 Spar‡ | A | 13-9-43 | 2-11-43 | 12-6-44 |
| WLB 404 SUNDEW‡ | A | 29-11-43 | 8-2-44 | 24-8-44 |
| WLB 405 SWEETBRIER‡ | A | 3-11-43 | 30-12-43 | 26-7-44 |
| WLB 406 Acacia | В | 16-1-44 | 7-4-44 | 1-9-44 |
| (ex-Thistle)‡ | | | | |
| WLB 407 Woodbrush‡ | В | 4-2-44 | 28-4-44 | 22-9-44 |
| | | | | |

- * has received Service Life Extension overhaul
- † has received austere renovation
- ‡ has received major renovation

D: 935 tons (1,025 fl) S: 12.8-13 kts Dim: 54.9 × 11.3 × 4.0

A: WLB 297, 389, 401, 402, 405: 2/20-mm AA (I \times 2)

Electron Equipt: Radar: 1/SPS-64(V)1

M: 2 diesels, electric drive; 1 prop; WLB 277 to WLB 302: 1,000 hp; WLB 297, WLB 305 to WLB 407: 1 200 hp. WLB 404: 1.800 hp (see Remarks)

WLB 305 to WLB 407: 1,200 hp. WLB 404: 1,800 hp (see Remarks)

Range: Most: 4,600/12-18: 14,000/7.4; WLB 297, WLB 306 to WLB 308, WLB 388, WLB 390, WLB 396, WLB 401: 8,000/12; 23,500/7.5; WLB 305, WLB 392, WLB 406, WLB 407: 10,500/13; 31,000/7.5

Fuel: Varies Man: 7 officers, 45 men Electric: 400 kw

Remarks: Evergreen (WLB 295) converted to oceanographic research ship and now used as a patrol ship. WLB 296, WLB 390, WLB 392, WLB 402, WLB 403, and WLB 404 have strengthened hulls for icebreaking, but all have icebreaker hull form. All have 20-ton derrick. These ships have been, or are being, modernized, and have rebuilt G.E. EMD 8-645E6A engines and propulsion motors, improved habitability, hydrau-



Mallow (WLB 396)

D. Westerberg, USCG, 1984



Laurel (WLB 291)

G. Arra, 7-85

lic cargo-handling gear, and bow-thrusters. *Blackthorn* (WLB 391) rammed and sunk 28-1-80, replaced by *Cowslip* (WLB 277), which was previously stricken 23-3-73, sold 1976, repurchased 19-1-81, and recommissioned 9-11-81. *Clover* (WLB 292) redesignated WMEC in 2-80, *Citrus* (WLB 300) redesignated WMEC in 6-79. WLB 404 has a maximum speed of 15 knots. Modernized ships have greater endurance. A total of 14 are planned to receive Service Life Extension, including WLB 290 and 296, completed 1983, WLB 277, completed 25-6-84, and WLB 301 and 302, completed in 1985.

BUOY TENDERS, COASTAL

• 5 Red class (157-ft class)

Bldr: Coast Guard Yard, Curtis Bay, Md.

WLM 685 RED WOOD WLM 686 RED BEECH WLM 687 RED BIRCH WLM 688 RED CEDAR WLM 689 RED OAK



Red Cedar (WLM 688)

G. Arra, 1976

D: 471 tons (512 fl) S: 12 kts Dim: 47.9 × 10.1 × 1.9

M: 2 diesels; 2 CP props; 1,800 hp Range: 2,248/12.8; 3,055/11.6

Man: 4 officers, 27 men

REMARKS: WLM 685 and WLM 686 completed in 1964, WLM 687 in 1965, WLM 688 in 1970, and WLM 689 in 1971. Can break light ice. Have 10-ton derrick, and a bow-thruster.

♦ 6 White class (133-ft class)

WLM 540 WHITE SUMAC WLM 543 WHITE HOLLY

WLM 544 WHITE SAGE WLM 545 WHITE HEATH WLM 546 WHITE LUPINE WLM 547 White Pine

D: 435 tons (600 fl) S: 9.8 kts Dim: 40.5 × 9.4 × 2.7

M: 2 Union diesels; 2 props; 600 hp Range: 2,100/9.8; 4,500/5.1 Electric: 90 kw Fuel: 40 tons Man: 1 officer, 20 men

REMARKS: WLM 540 completed in 1943, WLM 542 and WLM 543 in 1944; others in 1942. Former U.S. Navy YF (covered lighter, self-propelled). One 10-ton boom. Sister White Bush (WLM 542) stricken 16-9-85.

BUOY TENDERS, COASTAL (continued)



White Sage (WLM 544)

1976

• 1 Hollyhock class (175-ft class)

Bldr: Moore DD Co., Oakland, Cal.

WLM 212 Fir (In serv. 1-10-40)



Fir (WLM 212)

1974

D: 825 tons (986 fl) S: 12 kts Dim: 53.4 × 10.4 × 3.7 M: 2 diesels; 2 props; 1,350 hp Electron Equipt: Radar: 1/SPS-64(V)1 Range: 5,650/12; 8,675/7.5 Man: 5 officers, 35 men

Remarks: Redesignated from WLB to WLM on 1-1-65. Has a 20-ton boom. Sisters Hollyhock (WLM 220) and Walnut (WLM 252) stricken 31-3-82 and 15-6-82, respectively.

BUOY TENDERS, INLAND

◆ 1 (+ . . .) Tern (80-ft.) class

Bldr: . . .

80801 TERN (In serv. 1982)

D: 135 tons (168 normal fl) S: 10 kts Dim: 24.6 × 7.0 × 1.45

Electron Equipt: Radar: 1/. . . navigational

M: 2 diesels; 2 right-angle hydraulic drive props; 470 hp — 1/125 hp 360-degree rotating bow-thruster

Fuel: 53 tons

Remarks: Prototype for a new class. Can carry and lay buoys of up to 35 tons weight. Considered a "boat," hence no WLI number.

• 1 Buckthorn class (In serv. 1963)

WLI 642 BUCKTHORN

D: 200 tons (fl) S: 11.9 kts Dim: 30.5 × 7.3 × 1.2 M: 2 diesels; 2 props; 600 hp Range: 1,300/11.9; 2,000/7.3

Man: 1 officer, 13 men

Remarks: Bow rectangular at main deck. Has one 5-ton boom. Based on the Great Lakes.

• 2 Bayberry class (65400 class) (In serv. 1954)

WLI 65400 BAYBERRY WLI 65401 ELDERBERRY

D: 68 tons (fl) S: 11.3 kts Dim: 19.8 × 5.2 × 1.2
 M: 2 diesels; 2 props; 400 hp Range: 800/11.3; 1,700/6 Man: 5 tot.

◆ 2 Blackberry class (65300 class) (In serv. 1946)

WLI 65303 Blackberry WLI 65304 Chokeberry

D: 68 tons (fl) S: 9 kts Dim: 19.8 × 5.2 × 1.2 M: 1 diesel; 1 prop; 220 hp Range: 700/9; 1,500/5 Man: 5 tot. ♦ 1 Cosmos class (100-ft class)

Bldr: Burchfield Boiler Co., Tacoma, Wash.

WLI 313 BLUEBELL

Laid down 20-3-44 L In serv. 28-9-44 24-3-45

D: 178 tons (fl) S: 10.5 kts Dim: 30.5 × 7.3 × 1.5

M: 2 diesels; 2 props; 600 hp Range: 1,400/10.5; 2,700/7

Remarks: Four sisters retyped WLIC on 1-10-79.

BUOY TENDERS, RIVER

• 0 (+1) new-construction 75 ft.

Remarks: One new unit requested under FY 86 Budget to act as push-tug for an aids-tonavigation barge on the Arkansas River.

♦ 9 Gasconade class (75-ft class)

| | In serv. | | In serv. |
|---------------------|----------|--------------------|----------|
| WLR 75401 GASCONADE | 1964 | WLR 75406 KICKAPOO | 1969 |
| WLR 75402 Muskingum | 1965 | WLR 75407 Kanawha | 1969 |
| WLR 75403 Wyaconda | 1965 | WLR 75408 PATOKA | 1970 |
| WLR 75404 CHIPPEWA | 1965 | WLR 75409 CHENA | 1970 |
| WLR 75405 CHEYENNE | 1966 | | |



Gasconade (WLR 75401) - with CGB 90008, a 27.4-m buoy barge

USCG, 6-83

D: 141 tons (fl) S: 7.6-8.7 kts Dim: 22.9 × 6.7 × 1.2 M: 2 diesels; 2 props; 600 hp Range: 1,600/7.6; 3,100/6.5 Man: 12 tot.

Remarks: Flat-ended, barge-like hulls. WLR 75401 and WLR 75405 have associated buoy barges, which they push; they also have slightly larger crews. One 1-ton crane. All operate on the Mississippi River and its tributaries.

• 6 Ouachita class (65-ft class)

WLR 65501 OUACHITA WLR 65502 CIMARRON WLR 65503 OBION WLR 65504 SCIOTO WLR 65505 OSAGE WLR 65506 SANGAMON

Cimarron (WLR 65502) - with CGB 90009, a 27.4-m buoy barge

USCG, 12-83

D: 130-143 tons (fl) S: 10 kts Dim: 20.1 × 6.4 × 1.5

M: 2 diesels; 2 props; 600 hp Range: 1,700/10.5; 3,500/6 Man: 10 tot.

Remarks: WLR 65501 and WLR 65502 completed in 1960, others in 1962. WLR 65504 has an associated push-type buoy barge with a 3-ton crane, and a larger crew. All have a 3-ton crane aboard. Operate on the Mississippi River and its tributaries.

♦ 1 Sumac class (115-ft class)

Bldr: Peterson & Haecker, Blair, Nebraska

WLR 311 Sumac (In serv. 11-11-44)

D: 404 tons (478 fl) S: 10.6 kts Dim: 35.1 × 9.1 × 1.8 M: 3 Fairbanks-Morse diesels; 3 props; 2,250 hp Range: 5,000/10.6; 11,600/5 Man: 1 officer, 22 men

BUOY TENDERS, RIVER (continued)



Sumac (WLR 311) - with work barge

USCG, 3-85

♦ 1 Lantana class (80-ft class) Bldr: Peterson & Haecker, Blair, Nebraska WLR 80310 Lantana (In serv. 6-11-43)

D: 235 tons (fl) S: 10 kts Dim: 24.3 × 9.1 × 1.8 M: 3 diesels; 3 props; 945 hp Range: 5,000/10 Man: 1 officer, 19 men

♦ 1 Dogwood class (114-ft class) Bldr: Dubuque Boat & Boiler Wks., Iowa WLR 259 Dogwood (In serv. 17-9-41)

D: 230 tons (310 ft) S: 11 kts Dim: 34.8 × 7.9 × 1.2 M: 2 diesels; 2 props; 800 hp Range: 1,300/11; 2,800/5.5 Man: 1 officer, 20 men

CONSTRUCTION TENDERS, INLAND

• 4 Pamlico class (160-ft class) Bldr: Coast Guard Yard, Curtis Bay, Md.

| | In serv. | | In serv |
|------------------|----------|-------------------|---------|
| WLIC 800 Pamlico | 1966 | WLIC 803 KENNEBEC | 1977 |
| WLIC 801 Hudson | 1966 | WLIC 804 SAGINAW | 1977 |



Pamlico (WLIC 800)

1976

D: 413 tons (459 fl) S: 11.5 kts Dim: 49.1 × 9.1 × 1.2 Electron Equipt: Radar: 1/Raytheon 1900 M: 2 Cummins D379, 8-cyl. diesels; 2 props; 1,000 hp Range: 1,400/11; 2,200/6.5 Man: 1 officer, 13 men

Remarks: Design combines capabilities of the Anvil class and their associated equipment barges. One 9-ton crane.

• 10 Anvil class (75-ft class) (In serv. 1962-65)

| WLIC 75301 ANVIL | WLIC 75305 Vise | WLIC 75308 SPIKE |
|-------------------|------------------|--------------------|
| WLIC 75302 HAMMER | WLIC 75306 CLAMP | WLIC 75309 HATCHET |
| WLIC 75303 SLEDGE | WLIC 75307 WEDGE | WLIC 75310 Axe |
| WLIC 75304 MALLET | | |

D: 145 tons (fl) S: 9.1 kts Dim: 22.9 × 6.7 × 1.2

M: 2 diesels; 2 props; 600 hp Range: 2,200/5 Man: 0 or 1 officer, 9 men

Remarks: All except Anvil and Mallet have an associated push-type barge with a 9-ton crane. WLIC 75306 to WLIC 75310 are 23.2 m overall and can make 9.4 knots.

♦ 3 Cosmos class (100-ft class) Bldr: Dubuque Boat & Boiler, Dubuque, Iowa

| | L | In serv. | | L | In serv. |
|-------------------|----------|----------|-------------------|---------|----------|
| WLIC 293 Cosmos | 11-11-42 | 5-12-42 | WLIC 315 SMILAX | 18-8-44 | 1-11-44 |
| WI IC 208 BAMPIED | 6.5.49 | 96.5.43 | WILL 316 PRIMPORE | 18-8-44 | 23-10-44 |

D: 178 tons (fl) S: 10.5 kts Dim: 30.5 × 7.3 × 1.5

Electron Equipt: Radar: 1/Raytheon 1900 M: 2 diesels; 2 props; 600 hp Range: 1,400/10.5; 2,700/7 Man: 1 officer, 14 men

Remarks: Reclassified from WLI on 1-10-79. Sister Bluebell remains typed WLI (WLI 313). WLIC 293 and WLIC 298 have associated construction barges, while WLIC 316 has a pile driver on her bow. All have a 5-ton crane. Sister Cosmos (WLIC 293) stricken 1985.



Primrose (WLIC 316) - with non-standard pile driver

USCG, 5-81

ICEBREAKING TUGS

8 (+1+1) Katmai Bay class (140-ft class)
 Bldr: Tacoma Boatbuilding,
 Tacoma, Wash., except WTGB 107, 109: Bay City Marine, Tacoma, Wash.

| | Laid down | L | In serv. |
|------------------------|-----------|----------|----------|
| WTGB 101 KATMAI BAY | 7-11-77 | 8-4-78 | 8-1-79 |
| WTGB 102 BRISTOL BAY | 13-2-78 | 22-7-78 | 5-4-79 |
| WTGB 103 MOBIL BAY | 13-2-78 | 11-11-78 | 6-5-79 |
| WTGB 104 BISCAYNE BAY | 29-8-78 | 3-2-79 | 8-12-79 |
| WTGB 105 NEAH BAY | 6-8-79 | | 18-8-80 |
| WTGB 106 Moro Bay | 6-8-79 | | 25-1-80 |
| WTGB 107 PENOBSCOT BAY | 1-7-83 | 27-7-84 | 2-1-85 |
| WTGB 108 THUNDER BAY | 20-7-84 | 15-8-85 | 4-11-85 |
| WTGB 109 STURGEON BAY | 7-86 | 2 2 2 | 6-86 |
| WTGB 110 N | | 1.1.1 | * * * |

Authorized: 1 in FY 76, 3 in FY 77, 2 in FY 78, 1 in FY 81.



Katmai Bay (WTGB 101)

L. & L. Van Ginderen, 5-85



Biscayne Bay (WTGB 104)

L. & L. Van Ginderen, 6-85

ICEBREAKING TUGS (continued)

D: 662 tons (fl) S: 14.7 kts Dim: 42.67 (39.62 pp) × 11.43 × 3.66

Electron Equipt: Radar: 1/SPS-64(V)1

M: 2 Fairbanks-Morse 38D81/4 diesels, Westinghouse electric drive; 1 prop; 2,500 hp

Electric: 250 kw Range: 1,800/14.7; 4,000/12

Fuel: 71 tons Man: 3 officers, 14 men

Remarks: Displace 673 tons in fresh water. Reclassified from WYTM on 5-2-79. WTGB 101-105 operate on the Great Lakes. Can break 76-mm ice. Have portable bubble-generator system housed in a removable deckhouse on the fantail. Two firefighting monitors atop the pilothouse, which provides near 360-degree viewing. One 2-ton crane handles a 4.9-m plastic workboat. Initially intended to replace the older WYTMs in service. WTGB 109 authorized FY 86 using Navy funds; at least one more planned.

WTGB 102 operates with a 45.72 × 18.29 × 3.05 former jackup barge converted 11-84 by Bay SB, Sturgeon Bay, Wisc., for a 2-year experimental program on the Great Lakes. A 300-hp Schöttel vertical cycloidal bow-thruster prop, powered by a G.M. 8V92 diesel was added to the barge, as was a 10-ton 21.3-m extendable boom, to

permit the craft to act as an aids-to-navigation tender.

HARBOR TUGS, MEDIUM

♦ 5 110-ft class

Bldr: Ira S. Bushey, Brooklyn, N.Y. (except WYTM 60: Coast Guard Yard, Curtis Bay, Md.)

| | In serv. | | In serv. |
|-----------------|----------|-------------------|----------|
| WYTM 60 MANITOU | 15-3-43 | WYTM 96 CHINOOK | 24-3-44 |
| WYTM 73 MOHICAN | 29-2-44 | WYTM 98 SNOHOMISH | 2-5-44 |
| WYTM 93 RARITAN | 11-4-39 | | |



Chinook (WYTM 96)

USCG, 1977

D: 370 tons (384 fl) **S:** 11.2 kts **Dim:** $33.54 \times 8.29 \times 3.51$ Electron Equipt: Radar: 1/SPS-64(V)1 or Raytheon 1900

M: 2 G.M. or Ingersoll-Rand 8-cyl. diesels, electric drive; 1 prop; 1,000 hp

Range: 1,845/11.2; 4,000/8 Man: 1 officer, 19 men

REMARKS: Arundel (WYTM 90) stricken 30-4-82; Yankton (WYTM 72) and Mahoning (WYTM 91) stricken 10-84, Sauk (WYTM 99) stricken 5-85, Apalachee (WYTM 71) stricken 4-11-85. WYTM 98 scheduled to strike 4-86, and WYTM 96 in 7-86.

HARBOR TUGS, SMALL

◆ 14 65-ft class (In serv. 1961-67)

WYTL 65601 CAPSTAN WYTL 65602 CHOCK WYTL 65603 SWIVEL WYTL 65604 TACKLE WYTL 65605 TOWLINE

WYTL 65606 CATENARY WYTL 65607 BRIDLE WYTL 65608 PENDANT WYTL 65609 SHACKLE WYTL 65610 HAWSER

WYTL 65611 LINE WYTL 65612 WIRE WYTL 65614 BOLLARD WYTL 65615 CLEAT



Capstan (WYTL 65601)

R. Scheina, 1979

D: 72 tons (fl) S: 9.8 (first 6: 10.5) Dim: 19.8 × 5.8 × 2.1

Electron Equipt: Radar: 1/Raytheon 1900 M: 1 diesel; 1 prop; 400 hp Range: 850/9.8; 2,700/5.8 (WYTL 65601 to WYTL 65606: 3,600/6.8; 8,900/10.5)

Remarks: Sister Bitt (WYTL 65613) stricken 10-4-82. All serve on U.S. East Coast.

Note: The two remaining U.S. Coast Guard lightships have been stricken, Lightship I (WLV 612) on 29-3-85, and Lightship II (WLV 613) in late 1984.

FERRIES

Note: The following three ships are not commissioned cutters of the U.S. Coast Guard, but are under Coast Guard control. Their status is "in service" and they are civilianmanned. Former U.S. Army units, they operate from Governors Island in New York

Lt. Samuel S. Cours (In serv. 1956) Pvt. Nicholas Minue (In serv. 1956)

D: 869 tons S: 12 kts Dim: 54.9 × 18.9 × 3.0 M: Diesel-electric drive; . . . props; 1,000 hp

THE TIDES (In serv. 1946)



The Tides

J. Jedrlinic, 1981

D: 774 tons (l) S: 12 kts Dim: 56.4 × 16.8 × 2.7 M: Diesel-electric drive; . . . props; 1,350 hp

SMALL CRAFT

The U.S. Coast Guard operates some 2,000 small craft, including over 1,000 under 7.62-m classified as UTL (Utility Boat, Light). No central registry of their numbers is maintained, their administration being the responsibility of the stations to which they are attached. All carry five-digit serial numbers, the first two digits of which denote the craft's length in feet. Two 16.8-m buoy boats were authorized under FY 84. Typical units in several numerically important classes are shown on the following pages.

♦ 250 41-ft Utility Boats Bldr: USCG Yard, Curtis Bay, Md. (In serv. 1971-83)



41407

W. Donko, 7-85

D: 12.8 tons (fl) S: 22-26 kts Dim: 12.40 × 4.11 × 1.22

Electron Equipt: Radar: 1/Raytheon 1900

M: 1 Cummins V903M (280-hp) or VT903M (320-hp) diesel; 1 prop

Remarks: Prototype delivered 1971; between 1973-1982 some 249 more followed. Aluminum construction. Hull numbers start with 41300.

♦ 365 30-ft Utility Boat Mk III Type

D: 6 tons (fl) S: 25 kts Dim: 9.14 × 2.31 × 0.86

Electron Equipt: Radar: 1/Raytheon 1900

M: 1 Cummins VT8-370M (270 hp) or UT6-250M (280 hp) diesel; 1 prop

Remarks: Glass-reinforced plastic construction.

SMALL CRAFT (continued)



32305 - 30-ft Utility Boat Mk III

L. & L. Van Ginderen, 5-84

♦ 20 55-ft-class Aids-to-Navigation Boats

D: 28.8 tons (fl) **S:** 22 kts **Dim:** $17.68 \times 5.18 \times 1.52$ **M:** 1 G.M. 12 V71 TI diesel; 1 prop; 540 hp

Remarks: Aluminum construction.

♦ . . . 45-ft-class Aids-to-Navigation Boats



Powered by a single G.M. 6-71 diesel, the 45-ft. buoy-tender class handles small navigational buoys with a hydraulically powered quadrantial derrick over the bow. Number 45312 has a Raytheon 1900 radar C. Dragonette, 1980

◆ 50 (+. . .) 21-ft Aids-to-Navigation Boats Ark. (In serv. 1981-. . .)

Bldr: MonArk, Monticello,



21-ft. Aids-to-Navigation Boat

MonArk, 1985

D: 1.59 tons light (3.17 fl) S: 30 kts Dim: 6.50 × 2.44 × 0.36 (hull) M: 1 gasoline engine; 1 prop; 228 hp

Remarks: Aluminum construction, design based on builder's 21-V, deep-Vee hull design. Can be mounted on a trailer for land transport.

• . . . 44-ft Motor Lifeboat class

Bldr: USCG Yard, Curtis Bay, Md.



44-ft. Motor Lifeboat 44350

R. Scheina, 8-84

D: 16 tons (fl) S: 15 kts Dim: 13.06 × 3.86 × 0.93 Electron Equipt: Radar: 1/. . . nav. Man: 3 tot.

M: 2 G.M. 6-71 diesels; 2 props; 360 hp Range: 150/12 Fuel: 1.2 tons

Remarks: "Unsinkable" design, built during the 1960s. Fifty or more in service. Also built for Canadian Coast Guard, under license.

. . . 30-ft Surf Rescue Boats



30-ft. Surf Rescue Boat 30201

USCG, 10-79

D: 4.6 tons (fl) **S:** 28 kts **Dim:** $9.25 \times 2.84 \times 1.09$ **M:** 1 G.M. GV92T diesel; 1 prop; 375 hp



A 20-ft outdrive-powered, glass-reinforced, plastic-hulled local patrol craft, Number 201511, is a standard Penn Van pleasure craft adapted for Coast Guard requirements A.D. Baker, 7-76

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

Personnel: 350 commissioned officers, approx. 2,250 civilians

NOAA operates a fleet of 23 research ships divided into the two categories of Research and Survey. Headquartered in Rockville, Maryland, and commanded by a rear admiral, it has its major maritime facilities at the Atlantic Marine Center in Norfolk, Virginia, and the Pacific Marine Center in Seattle, Washington.

Hulls and superstructures are white, masts and stacks buff. Hull numbers appear on either side (preceded by "R" for research or "S" for Survey) above the letters "NOAA." The front digit in the 3-digit hull number is the NOAA class (i.e., size) number for the ship, determined from the gross tonnage and horsepower. The ships are described below in descending size order.

Funding shortages for oceanographic research have resulted in plans to lay up many of NOAA's ships during 1986, as noted in the listings.

OCEANOGRAPHIC RESEARCH SHIPS

2 Oceanographer class
 Bldr: Aerojet-General SY, Jacksonville, Fla.

L In serv. Base
R 101 Oceanographer 4-64 7-66 Seattle (laid up)
R 102 Discoverer 10-64 4-67 Seattle



Discoverer (R 102)

NOAA, 1985

D: 4,033 tons (fl) S: 15 kts (sust.) Dim: 92.4 × 15.8 × 6.0

M: 2 Westinghouse 1,150 diesel generator sets, 2 Westinghouse motors; 2/4bladed props; 5,000 hp

Range: 12,250/15 Fuel: 937 tons Electric: 1,200 kw

Man: R 101: 14 NOAA officers; 6 licensed officers; 57 crew, 30 scientists R 102: 13 NOAA officers, 6 licensed officers, 60 crew, 24 scientists

Remarks: 3,701 grt/1,095 n.t. Both carry PDP 11/34 data-processing computers. R 101 has a large weather radar aft; both have two navigational radars. Endurance is 34 days. Laboratories include chemistry, wet and dry oceanographic, meteorological, gravimetric, and photographic. A computerized data recording and processing system is installed. There are several precision oceanographic winches. A 400-hp bow-thruster is fitted. R 102 received the Seabeam, 12-kHz multi-beam bathymetric mapping sonar, INMARSAT SATCOMM system for dataline transmission and the TI-410 Global Position Indicator in 1985; she has an underwater observation chamber.

• 1 Researcher class

Bldr: American Shpbldg., Toledo, Ohio

R 103 RESEARCHER

Launched 10-68 In serv. 10-70 Base Miami



Researcher (R 103) - showing helicopter pad aft

NOAA

D: 2,963 tons (fl) S: 12.5 kts (sust.) Dim: 84.8 × 15.5 × 5.6

M: 2 Alco diesels; 2 CP props; 3,200 hp

Range: 10,800/12.5 Fuel: 568 tons Electric: 1,500 kw Man: 13 NOAA officers, 5 licensed officers, 50 crew, 14 scientists

Remarks: 2,802 grt/946 nrt. Bow dome for sonars and echo-sounders, five laboratories, 5 oceanographic winches. PDP 11/34 computerized data system. Endurance: 36 days. Has a 450-hp Pleuger retractable bow-thruster. Receiving INMARSAT and Global Position Indicator, Seabeam multi-beam mapping sonar in 1986. Carries seismic profile compressors. Has a helicopter deck and a stern ramp.

• 1 Miller Freeman class

Bldr: American Shipbldg., Lorain, Ohio

R 223 MILLER FREEMAN

1967

In serv. 1974 Base Seattle



Miller Freeman (R 223) - note portable van beside stack

NOAA

D: 1,920 tons (fl) S: 14 kts (sust.) Dim: 66.0 × 12.5 × 6.1 M: 1 G.M. diesel; 1 CP prop; 2,200 hp Electric: 700 kw

Range: 13,800/14 Fuel: 450 tons

Man: 7 NOAA officers, 4 licensed officers, 30 crew, 11 scientists

Remarks: 1,515 grt/680 nrt. Conducts fisheries and living marine resources research. Endurance: 41 days. Chemical, wet oceanographic, fish processing, utility labs. Fish-finder sonars, several echo-sounders. Lowerable stabilization centerboard increases draft to 9.3 m. Has a stern trawl ramp and net-handling gallows. 400 hp Schöttel lowerable bow-thruster. Planned to lay up at Seattle in 1986.

• 1 Oregon II class

Bldr: Ingalls SB, Pascagoula, Miss.

R 332 OREGON II

L 2-67 In serv. 8-67 Base Pascagoula



Oregon II (R 332)

NOAA

D: 952 tons S: 12 kts (sust.) Dim: $51.8 \times 10.4 \times 4.3$ M: 2 Fairbanks-Morse diesels; 1 CP prop; 1,600 hp Range: 9,500/12 Fuel: 255 tons Electric: 400 kw Man: 6 licensed officers, 10 crew, 6 scientists

Remarks: 703 grt/228 nrt. Conducts fisheries and living marine resource research in the Gulf of Mexico, Caribbean, South Atlantic, and Southeast U.S. Atlantic Coast. Endurance: 33 days. Has 2 trawls, 1 hydrographic and 1 bathythermographic winches, five laboratories.

In serv

5-63

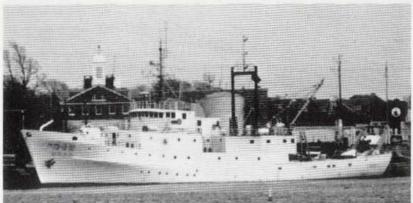
1 Albatross IV class

Bldr: Southern SB, Slidell, Louisiana

R 342 Albatross IV

L 4-62 Base Woods Hole, Mass.

OCEANOGRAPHIC RESEARCH SHIPS (continued)



Albatros IV

NOAA

D: 1,089 tons (fl) S: 12 kts (sust.) Dim: 57.0 × 10.0 × 4.9 M: 2 Caterpillar diesels; 1 Kort-nozzle CP prop; 1,130 hp Range: 4,300/12 Fuel: 150 tons Electric: 450 kw Man: 7 NOAA officers, 15 crew, 15 scientists

bow-thruster. Endurance: 15 days. Planned to be laid up during 1986.

Remarks: 931 grt/300 nrt. Conducts fisheries and living marine resources research off the U.S. Northeast Atlantic Coast. Has wet and dry oceanographic, photographic, biological, plankton, and electronics laboratories, four scientific winches, vertical fish-finding sonar, and deep- and shallow-water echo-sounders. There is a 125-hp

1 Townsend Cromwell class

Bldr: J. Ray McDermott Co., Morgan City, La.

Base

L In serv. R 443 Townsend Cromwell 7 - 637-63 Honolulu



Townsend Cromwell (R 443)

NOAA

D: 652 tons (fl) S: 11.5 kts (sust.) Dim: 49.7 × 10.0 × 3.9 M: 2 White-Superior diesels; 2 CP props; 800 hp Electric: 350 kw Range: 8,300/11.5 Fuel: 132 tons Man: 4 NOAA officers, 3 licensed officers, 10 crew, 9 scientists

REMARKS: 564 grt/384 nrt. Conducts fisheries and living marine resources research off the Hawaiian Islands and in the Central Pacific. Has a single oceanographic laboratory and an underwater bow observation chamber. Endurance: 30 days. Taken over by NOAA 6-75.

1 David Starr Jordan class

Bldr: Christy Corp., Sturgeon Bay, Wisc.

In serv. Base T. R 444 DAVID STARR JORDAN San Diego, Cal. 12-64 1-66



David Starr Jordan (R 444)

NOAA

D: 993 tons (fl) S: 11.5 kts (sust.) Dim: 52.1 × 11.2 × 3.8 (4.8 over sonar) M: 2 White-Superior diesels; 2 CP props; 1,086 hp Electric: 400 kw Fuel: 180 tons Range: 8,560/11.5

Man: 6 licensed officers, 10 crew, 13 scientists

Remarks: 873 grt/262 nrt. Conducts fisheries and living marine resources research off U.S., Central, and South American Pacific coasts. Physical and biological oceanography, chemical and photographic labs. Has a retractable fish-finding sonar, a vertical fish-finder, and several echo-sounders. Schöttel retractable bow-thruster of 200 hp. Endurance: 31 days. Has an underwater observation chamber at the bow. Planned to be laid up during 1986.

1 Delaware II class Bldr: South Portland Engineering Corp., South Portland, Maine

Base

Woods Hole, Mass. R 445 Delaware II 12-67 10-68



Delaware II

NOAA

D: 758 tons (fl) S: 11.5 kts (sust.) Dim: 47.2 × 9.2 × 4.5 M: 1 G.M. diesel; 1 prop; 1,230 hp Electric: 300 kw Fuel: 132 tons Range: 6,600/11.5

Man: 6 licensed officers, 9 crew, 9 scientists

Remarks: 483 grt/231 nrt. Conducts fisheries and living marine resources research off U.S. Atlantic coast. Two oceanographic labs, fish-finding sonars, stern net ramp. Endurance: 24 days. Planned to be laid up, 1986.

Bldr: Bender SB & Repair Co., Washington 1 Chapman class

L In serv. Base R 446 CHAPMAN 12-79 7-80 Pascagoula, Miss. (laidup)



Chapman (R 446)

NOAA

D: 520 tons (fl) S: 11 kts (sust.) Dim: 38.7 × 9.1 × 4.3

M: 1 Caterpillar D 399 diesel; 1 CP prop; 1,250 hp Electric: 420 kw

Fuel: 126 tons Range: 6,000/11

Man: 3 NOAA officers, 1 licensed officer, 7 crew, 6 scientists

Remarks: 427 grt/290 nrt. Conducts fisheries and living marine resources research off the Pacific Northwest and Alaskan coasts. Has a fish-processing and a dry laboratory. Stern-haul trawler with a 150-hp Omnithruster bow-mounted waterjet. Laid up 1984 for two years or more.

 1 John N. Cobb class Bldr: Western Boatbldg., Tacoma, Wash.

L In serv. Base

1-50 2-50 R 552 JOHN N. COBB Seattle

D: 250 tons (fl) S: 9.3 kts (sust.) Dim: 28.3 × 7.9 × 3.3 M: 1 Fairbanks-Morse diesel; 1 prop; 325 hp Electric: 60 kw

Range: 2,900/9.3 Fuel: 25 tons Man: 4 licensed officers, 4 crew, 4 scientists

Remarks: 185 grt/78 nrt. Conducts fisheries and living marine resources research off Southeast Alaska and U.S. Pacific Northwest coasts. Has a single laboratory. Endurance: 13 days. Planned to be laid up, 1986.

OCEANOGRAPHIC RESEARCH SHIPS (continued)



John N. Cobb (R 552)

NOAA

♦ 1 Murre II class

Bldr: U.S. Army

In serv.

Base

R 663 MURRE II

1943 Juneau, Alaska



Murre II

NOAA

D: 295 tons (fl) S: 8 kts Dim: 26.1 × 8.2 × 2.3

M: 2 Caterpillar diesels; 2 props; 330 hp Electric: 32 kw
Fuel: 15 tons Range: 1,500/8 Man: 2 licensed officers, 1 crew, 5 scientists

Remarks: 189 grt/95 nrt. Conducts fisheries research and cargo shipment duties in Southeast Alaskan waters. Former wooden-hulled Army powered barge. One chemical and one biological laboratory. Has a 2-ton cargo boom for deck cargo. Endurance: 8 days. Planned to be laid up, 1986.

SURVEY SHIPS

♦ 1 Surveyor class

Bldr: National Steel & SB, San Diego, Cal.

S 132 SURVEYOR

4-59

In serv. 4-60

Base Seattle



Surveyor (S 132)

NOAA

D: 3,440 tons (fl) S: 15 kts (sust.) Dim: 89.0 × 14.0 × 5.9 M: 2 sets de Laval GT; 1 prop; 3,200 hp Electric: 800 kw Boilers: 2 Combustion Engineering; 32.7 kg/cm², 385°C

Fuel: 785 tons Range: 13,680 n.m./15

Man: 12 NOAA officers, 6 licensed officers, 58 crew, 16 scientists

Remarks: 2,653 grt/682 nrt. Has PDP 11/34 data-processing computer, seismic reflection profile compressors, wet and dry oceanography, gravimetric, and photographic laboratories, extensive navigational equipment, deep and shallow echo-sounders, stabilized mapping sonar system, Hydroplot data-processing system, seismic reflection profile compressors, and a small helicopter platform. Carries 3/11-m wooden survey launches, an ex-U.S. Navy LCVP, and 2/7.9-m motor whaleboats. Has a 200-hp electric auxiliary propulsion motor aft. Endurance: 38 days. Received Seabeam 12kHz, 9,000-m multi-beam mapping sonar in 1985.

• 3 Mt. Mitchell class Bldr: Aerojet-General SY, Jacksonville, Fla.

| | L | In serv. | Base |
|--------------------|-------|----------|---------|
| S 220 Fairweather | 3-67 | 10-68 | Seattle |
| S 221 RAINIER | 3-67 | 10-68 | Seattle |
| S 222 Mt. MITCHELL | 11-66 | 3-68 | Norfoll |



Fairweather (S 220)

NOAA

D: 1,800 tons (fl) S: 13 kts Dim: 70.4 × 12.8 × 4.2 M: 2 G.M. diesels; 2 CP props; 2,400 hp Electric: 600 kw

Fuel: 353 tons Range: 7,000/13 Man: 12 NOAA officers, 5 licensed officers, 52 crew, 4 scientists

Remarks: 1,591 grt/578 nrt. Have an oceanographic laboratory, Hydroplot data-processing system (also carried in two of the 3 or 4 8.8-m survey boats aboard), several echo-sounders, and an oceanographic winch. In addition to the survey launches, carry 2 motor whaleboats and 3 Boston Whaler utility boats. Have a 200-hp bow-thruster. Endurance: 22 days.

Bldr: Marietta Mfg. Co., Pt. Pleasant, West Va. 2 Peirce class

| | L | In serv. | Base |
|---------------|-------|----------|---------|
| S 328 Peirce | 10-62 | 5-63 | Norfolk |
| S 329 WHITING | 11-62 | 7-63 | Norfolk |

SURVEY SHIPS (continued)



Peirce (S 328)

NOAA, 1985

D: 907 tons (fl) S: 12 kts (sust.) Dim: 49.7 × 10.1 × 3.4
 M: 2 G.M. diesels; 2 CP props; 1,600 hp Electric: 440 kw

Fuel: 138 tons Range: 5,700/12

Man: 8 NOAA officers, 3 licensed officers, 30 crew, 2 scientists

Remarks: 696 grt/151 nrt. Have the Hydroplot data system to record hydrographic data; also fitted to the two 8.8-m survey launches. Have deep, shallow, and hydrographic survey echo-sounders. Work on the U.S. Atlantic Coast, Gulf of Mexico, and U.S. Caribbean possessions; *Peirce* also operates in the Great Lakes. Endurance: 20 days. Planned to lay up S 329 in 1986.

◆ 2 McArthur class Bldr: Norfolk SB & DD, Norfolk, Va.

L In serv. Base S 330 McArthur 11-65 12-66 Seattle S 331 Davidson 5-66 3-67 Seattle



McArthur (S 330)

NOAA, 1985

D: 995 tons (fl) S: 12 kts (sust.) Dim: $53.3 \times 11.6 \times 3.7$ M: 2 G.M. diesels; 2 CP props; 1,600 hp Electric: 440 kw Fuel: 186 tons Range: 6,000/12 Man: 8 NOAA officers, 3 licensed officers, 27 crew, 2 scientists

Remarks: 854 grt/207 nrt. S 330 primarily performs seawater circulatory studies, and S 331 performs hydrographic surveys; both operate off the U.S. Pacific Coast, and in Alaskan coastal waters. S 331 has the Hydroplot data-recording system, while S 330 uses the same system's PDP 11/34 computer to record current data. S 331 has the Bathymetric Swath Survey System, a stabilized, 22-beam 600-m depth mapping sonar. S 330 planned to be laid up 1986. Endurance: 17 days.

♦ 1 Ferrell class Bldr: Zigler SY, Jennings, La.

L In serv. Base S 492 Ferrell 4-68 6-68 Norfolk

D: 360 tons (fl) S: 10 kts (sust.) Dim: $40.5 \times 9.8 \times 2.5$ M: 2 Caterpillar diesels; 2 props; 750 hp Electric: 300 kw

Fuel: 46 tons Range: 2,200/10

Man: 5 NOAA officers, 2 licensed officers, 12 crew



Ferrell (S 492)

NOAA, 1985

Remarks: 349 grt/86 nrt. Has a PDP 11/34 data-processing computer. Conducts coastal and estuarine seawater circulation studies off the U.S. East Coast and Gulf of Mexico. Has an electronics laboratory and a small oceanographic laboratory, and carries an 8.5-m workboat. Has a 100-hp bow-thruster. Computerized data-recording system. Endurance: 9 days. Planned to lay up, 1986.

♦ 2 Rude class Bldr: Jakobson SY, Oyster Bay, N.Y.

L In serv. Base S 590 Rude 8-66 3-67 Norfolk S 591 Heck 8-66 3-67 Norfolk



Heck (S 591)

NOAA

D: 220 tons (fl) S: 10 kts (sust.) Dim: 27.4 × 6.7 × 2.2

M: 2 Cummins diesels; 2 Kort-nozzle props; 800 hp Electric: 120 kw

Fuel: 12 tons Range: 800/10

Man: 3 NOAA officers, 1 licensed officer, 7 crew

Remarks: 150 grt/42 nrt. Work together in making wire drag surveys off U.S. Atlantic and Gulf Coasts. Have side-scan sonars and computerized data storage. Equipped with two 70-hp hydraulic auxiliary drives. Endurance: 3 days.

Note: U.S. Navy sludge-removal barge YSR 29 was transferred to NOAA 8-85 for use as an underwater habitat support barge. Completed 12-45, the craft displaces 160 tons light (360 fl) and measures 24.4×9.8 . It will be equipped with a centerline "moon pool."

U.S. ARMY

The U.S. Army's fleet is divided into units (primarily dredges) operated by the Corps of Engineers, and landing craft and logistics support craft operated by the Corps of

U.S.A. (continued) U.S. ARMY (continued)

Transportation. Units belonging to the latter are numerous but almost entirely obsolescent, while a new construction program has been thwarted by lack of congressional support and by contractual litigation. Principal Corps of Transportation units are listed below.

1 Design 5002 Beach Discharge Lighter (Medium Landing Ship) Bldr: National Steel, San Diego, Cal.

Lt. Col. John D. Page (In serv. 11-58)

D: 1.548 tons light (4.126 fl) S: 10 kts Dim: 103.09 × 19.83 × 4.17 (max) M: 2 Fairbanks-Morse diesels; 2 vertical cycloidal props; 2,400 hp Electric: 525 kw Range: 7,776/9 Man: 49 crew + 200 passengers

REMARKS: A large, open-deck vehicle ferry, intended to mate with U.S. Navy's vehicle cargo ship Comet (T-AKR 7). Only one built of a projected large class. Cargo: 600 tons landing, 2,200 tons max. 1,395 m² deck space. Beaching displacement is 2,340 tons.

• 0 (+4) Vehicle Landing Ships Bldr: . . .

D: . . . S: 12 kts Dim: 83.0 × 18.3 × . . . M: . . . Range: 5,500/12

Remarks: Ordered 8-85 from Norfolk SB, Norfolk, Va., but contract canceled 10-85 over ambiguities in the original bid package. If reordered, will be able to transport 2,000 tons vehicle cargo or 11,000 bbl liquids. Army had hoped to order up to 24 units of this size, to replace the current LCU fleet.

13 U.S. Navy LCU 1646-class Utility Landing Craft (In serv. 1976-78)

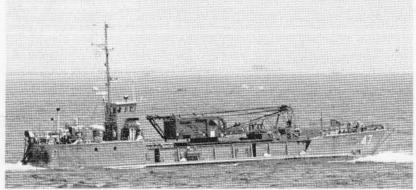


LCU 1675

L. & L. Van Ginderen, 7-79

REMARKS: Data as for U.S. Navy sisters. Retain former U.S. Navy hull numbers and now bear names commemorating Army battles.

43 U.S. Navy LCU 1466-class Utility Landing Craft (In serv. 1954)



LCU 1547

L. & L. Van Ginderen, 6-83

D: 180 tons light (347 fl) S: 8 kts Dim: 35.08 × 10.36 × 1.6 (aft) M: 3 Gray Marine 64 YTL diesels; 3 props; 675 hp Electric: 40 kw Fuel: 11 tons Range: 1,200/6 (700/7 loaded) Man: 11 tot.

REMARKS: Despite age, in good condition, with some kept in land storage. Some 35 are to be rehabilitated for further service.

about 120 U.S. Navy LCM(8)-class landing craft (In serv. 1954-72)

Remarks: Data as for U.S. Navy version. About 30 manned by Army Reserves, 37 by National Guard forces, with another 30 in storage.

◆ 20 (+10) LACV-30 air-cushion vehicles Bldr: Bell Aerospace-Textron

Remarks: 30-ton payload amphibious air-cushion vehicle for LOTS (Logistics Over the Shore) operations. 26 were to be in service by mid-1986, all by 1987. Can carry 2/20-ft MILVAN containers at 35 kts. Craft can be transported by trailer, rail, aircraft, or aboard ships. Also in use are about 65 LARC XV, 30 LARC LX, and 25 LARC 5 wheeled amphibious transport vehicles.

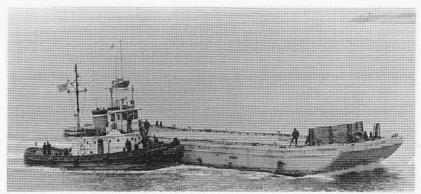
Note: In addition to the above, the Corps of Transportation operates 30 65-ft and 30 100-ft tugs, 160 barges in 36.6-, 33.5-, and 24.7-m lengths, 12 36.6-m liquid cargo



LACV in action

L. & L. Van Ginderen, 6-83

barges, 5 13.7-m liquid cargo barges, 3 refrigerated barges, 20 floating DeLong piers, 26 floating cranes, and a variety of small craft. Three small coastal freighters are also in service. Army new-construction plans called for 2 large tugs, 3 medium tugs, 2 workboats, and 3 DeLong piers to be ordered with FY 85 funds.



Army small harbor tug ST-2124 with 36.6-m barge BC-6461 L. & L. Van Ginderen, 5-85

URUGUAY

Personnel (1985): 4,400, including 500 officers, 2,900 enlisted, and 1,000 Marines

Merchant Marine (1984): 89 ships — 190,309 grt (tankers: 6 ships - 94,933 grt)

NAVAL AVIATION: Fixed-wing assets include 3 S-2G Tracker ASW patrol aircraft delivered 1982-83, 9 T-28 Fennec light attack aircraft, 3 Beech TC-45H utility trainer/ light transports, a Beech King Air 200 Maritime Patrol aircraft, and 3 Beech T-34C-1 turbo-trainers. Helicopters include one Bell 222, 2 Bell 476, and 2 Sikorsky SH-34C. The Air Force operates one Embraer EMB 110B Bandeirante and 4 Casa 212 Aviacar for coastal patrol

Note: The scheduled 1983 acquisition of the destroyer ex-William C. Lawe (DD 763) from the United States was canceled by Uruguay.

FRIGATES

♦ 1 ex-U.S. Dealey class

Bldr: Bath Iron Works, Me.

Laid down

In serv.

DE 3 18 Julio (ex-Dealey, DE 1006)

15-10-52

8-11-53 3-6-54

D: 1.450 tons (1.914 fl) S: 25 kts Dim: 95.86 × 11.2 × 4.04 (5.27 over sonar) A: 4/76.2-mm DP (II × 2) -6/324-mm Mk 32 ASW TT-1/d.c. rack



18 de Julio (DE 3)

L. & L. Van Ginderen, 1975

FRIGATES (continued)

Electron Equipt: Radar; 2/. . . nav., 1/SPS-6E, 2/SPG-34 Sonar: 1/SQS-29 series — EW: WLR-1

M: 1 set de Laval GT; 1 prop; 20,000 hp

Boilers: 2 Foster-Wheeler "D"; 42 kg/cm2, 510°C

Fuel: 360 tons Range: 4,400/11 Man: 11 officers, 150 men

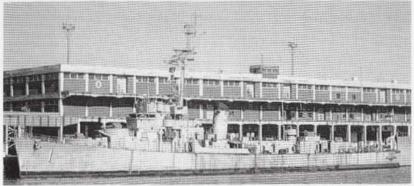
REMARKS: First and least-modified of her class and also the last survivor. Two Mk 63 GFCS. New superstructure added abreast the stack. Purchased on 28-7-72. Refitted 1979-80 in Brazil, original SPS-5D surface-search radar replaced by two commercial navigational radars.

• 2 ex-U.S. Cannon class

Bldr: Federal SB & DD, Newark, N.J.

DE 1 URUGUAY (ex-Baron, DE 166) DE 2 ARTIGAS (ex-Bronstein, DE 189)

Laid down L In serv. 9-5-43 30-11-42 5-7-43 13-12-43 26-8-43 14-11-43



Uruguay (DE 1)

Ships of the World, 1985

D: 1,240 tons light (1,900 fl) S: 19 kts Dim: 93.27 × 11.15 × 3.56 (hull) A: 3/76.2-mm DP (I × 3) -2/40-mm AA (II × 1) -3/20-mm AA (I × 3) -1/Mk 11 Hedgehog

Electron Equipt: Radar: 1/SPS-5, 1/SPS-6C (not in DE 1), 1/navigational Sonar: SQS-4 series

M: 4 G.M. 16-278A diesels, electric drive; 2 props; 6,000 hp

Electric: 680 kw Fuel: 315 tons Rnage: 8,300/14 Man: 160 tot. REMARKS: DE 1 was transferred in 5-52 and DE 2 in 3-52. Modernized in late 1960s with

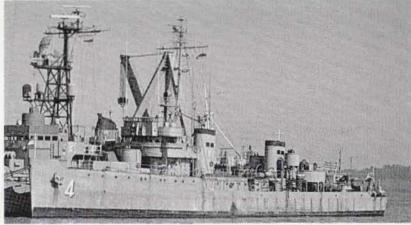
new radars. No radar fire control, but do have Mk 51 range-finder for 76.2-mm guns and Mk 51 Mod. 2 lead-computing director for 40-mm AA. DE 1 does not have stub mainmast and has had the SPS-6C radar removed. Both have had single 20-mm AA added. Depth-charge equipment had been removed by 1985, and both are in marginal operating condition.

CORVETTE

♦ 1 ex-U.S. Auk-class former minesweeper

Bldr: Defoe Boiler & Machine Works, Bay City, Mich.

4 COMANDANTE PEDRO CAMPBELL (ex-MS 31, ex-Chickadee, MSF 59) Laid down In serv. 20-7-42 9-11-42 21-8-41



Comandante Pedro Campbell (4) — outboard 18 de Julio (DE 3)

Ships of the World, 1985

D: 890 tons (1,250 fl) S: 18 kts Dim: 67.41 (65.53 wl) × 9.78 × 3.28 A: 1/76.2-mm DP - 4/40-mm AA (II × 2) -8/20-mm AA (II × 4)

Electron Equipt: Radar: 1/navigational

M: 4 Alco 539 diesels, electric drive; 2 props; 3,118 hp

Electric: 300 kw Man: 105 tot.

REMARKS: Transferred on 18-8-66 and purchased on 18-8-76. All minesweeping equipment removed; has no ASW capability. Minesweeping winch used for towing.

PATROL BOATS

| • 3 French Vigilante class | | Bldr: CMN, Cherbourg | | |
|----------------------------|-----------|----------------------|----------|--|
| | Laid down | L | In serv. | |
| 5 15 DE NOVIEMBRE | 6-12-79 | 16-10-80 | 25-3-81 | |
| 6 25 De Agosto | 6-2-80 | 11-2-80 | 25-3-81 | |
| 7 Comodoro Coe | 16-5-80 | 27-1-81 | 25-3-81 | |



15 de Noviembre (5) - on trials

CMN, 1981

D: 166 tons (190 fl) S: 28 kts Dim: 41.15 (28.00 pp) × 6.80 × 2.5 (1.50 hull)

A: 1/40-mm AA Electron Equipt: Radar: 1/Decca TM 1226C, 1/Decca 1229

M: 2 MTU 12V538 TB91 diesels; 2 props; 5,400 hp

Range: 2,400/15 Man: 5 officers, 22 men

REMARKS: Ordered 1978. CSEE Panda optronic GFCS for the 40-mm gun, which has a fiberglass cover to the mount. All commissioned day of departure under own power to Uruguay from Cherbourg. Twin 20-mm AA planned aft, not mounted.

1 ex-U.S, Adjutant-class former minesweeper

Bldr: National Steel SB, San Diego, Cal.

In serv. 13 Rio Negro (ex-MS 32, ex-Marguerite, ex-MSC 94) 3-54



Rio Negro (13) - old number, most minesweeping gear now removed

D: 300 tons (372 fl) S: 13 kts Dim: 43.0 (41.5 pp) × 7.95 × 2.95

A: 2/20-mm AA (II × 1)

Electron Equipt: Radar: 1/DRBN-31 — Sonar: UQS-1D

M: 2 G.M. 8-268A diesels; 2 props; 1,200 hp

Range: 2,500/10 Man: 38 tot.

REMARKS: On completion, transferred to France, then to Uruguay on 10-11-69. Wooden construction. Most minesweeping equipment, including sweep winch and cable drum, now removed.

PATROL CRAFT

1 U.S. 85-foot commercial cruiser

Bldr: Sewart Seacraft, Morgan City, La.

PR 12 PAYSANDU (L: 11-68)

D: 43.5 tons (54 fl) S: 22 kts Dim: 25.91 × 5.69 × 2.1

A: 3/12.7-mm mg (I × 3) Electron Equipt: Radar: 1/Raytheon 1500B

M: 2 G.M. 16V71N diesels; 2 props; 1,400 hp Electric: 40 kw

Range: 800/21 Man: 8 tot.

REMARKS: Built under U.S. Military Assistance Program. Aluminum construction.

PATROL CRAFT (continued)

♦ 1 ex-German FL-9 class Bldr: Krögerwerft, Rendsburg (In serv. 1955)

PR 11 CARMELO

D: 67 tons (73 fl) S: 30 kts Dim: 28.8 (27.9 pp) × 5.0 × 1.6

A: 1/20-mm AA Electron Equipt: Radar: 1/Decca 12

M: 2 Maybach 12-cyl. diesels; 2 props; 3,000 hp Range: 600/25 Man: 8 tot.

REMARKS: One of five sisters built as air-sea-rescue craft for the British Royal Air Force. Taken over by Uruguayan Navy in 1964. Wooden construction.

1 ex-U.S. 63-foot AVR class

PR 10 COLONIA (L: 4-7-44)

D: 25 tons (34 fl) S: 28 kts Dim: 19.3 × 4.67 × 1.22

A: 4/12.7-mm mg (II × 2)

M: 2 Hall-Scott Defender V-12 gasoline engines; 2 props; 1,260 hp

Fuel: 4.3 tons Range: 450/25; 600/15 Man: 8 tot.

Remarks: Former air-sea-rescue boat, transferred in about 1945. Wooden construction. No radar.

AMPHIBIOUS WARFARE CRAFT

♦ 2 LD 45-class landing craft

Bldr: Naval SY, Paysandu

LD 45 LD 46

D: 31.4 tons S: 10.5 kts Dim: 17.50 × 7.0 × 0.8

M: 2 G.M. 6V71 diesels; 2 props; 272 hp

REMARKS: LD 45 laid down 12-79. Referred to as Type 5-06.

Bldr: Naval SY, Montevideo ♦ 2 LD 43-class landing craft

LD 43 (In serv. 26-7-78) LD 44 (In serv. 1979)

D: 13 tons (fl) S: 9 kts Dim: 10.85 × 3.50 × 0.70

M: 1 G.M. 6-71 diesel; 1 prop; 140 hp Range: 580/9

Remarks: Up to four more may have been completed 1979-81. Can carry five tons cargo.

• 1 small landing craft

Bldr: Mapell S.A. (In serv. . . .)

LD 42

D: 12 tons S: 6 kts Dim: 12.0 × 3.4 × 1.1

M: 2 British G.M. Bedford 330 diesels; 2 props; 192 hp

◆ 2 U.S. LCM(6)-class landing craft

LD 40 LD 41

D: 24 tons (57 fl) S: 10 kts Dim: 17.07 × 4.37 × 1.17

M: 2 Gray Marine 64HN9 diesels; 2 props; 450 hp Range: 130/9

Remarks: LD 40 and LD 41 were leased in 10-72; lease extended 1982. Cargo: 30 tons.

HYDROGRAPHIC SHIPS

• 1 Paysandu-class former patrol boat

Bldr: CNR, Ancona

14 Salto (ex-GS 24) (L: 11-8-35)

D: 150 tons (180 fl) S: 17 kts Dim: 42.1 × 5.8 × 1.58

M: 2 Krupp-Germania diesels; 2 props; 1,000 hp

Range: 4,000/10 Man: 26 tot.

REMARKS: Survivor of a class of three, placed on present duties as a survey craft and navigational-buoy tender in 1972.

AUXILIARY SHIPS

• 1 supertanker Bldr: Kawasaki, Kobe, Japan, 1975

27 JUAN A. LAVALLEJA (ex-Solfonn)

D: 145,000 tons (fl) S: 15.5 kts Dim: 273.0 × 44.1 × 15.7 M: 2 sets GT; 1 prop; 24,500 hp Boilers: 2 Man: . . .

REMARKS: 131,633 dwt, 68,931 grt. Literally, the world's largest naval ship, by a wide margin. Laid up by Norwegian owner on 13-10-75, when she was completed. Purchased by Uruguay on 13-1-77 for use by ANCAP, the state petroleum monopoly, in commercial service with a naval crew. No underway replenishment capability.

Grounded 28-12-80 off Arzew, Algeria; refloated 17-2-81 and repaired in France.

Bldr: Bazán, Spain, 1971 • 1 tanker

28 Presidente Rivera (L: 20-5-71)

D: 36,000 tons (fl) S: 16.5 kts Dim: 194.0 (191.0 pp) × 25.4 × 9.8

M: 1 diesel; 1 prop; 15,300 hp Man: 58 tot.

Remarks: 31,885 dwt, 19,656 grt. Used in commercial service, with a naval crew, by ANCAP, the state petroleum monopoly. Late note: sold 1-86.

• 1 transport, former merchant cargo ship

In serv. 1966

29 Presidente Oribe (ex-Danish Catrina) Frederikshavn, Denmark

D: 1,153 tons S: 10 kts Dim: 54.2 × 9.6 × 3.3 M: 1 Burmeister & Wain diesel; 1 prop; 520 hp

Remarks: Ran aground while in merchant service 11-78 and salvaged by Uruguayan Navy; purchased from British insurance company and commissioned 19-8-80.

♦ 1 ex-U.S. Cohoes-class salvage ship land, Ore.

Bldr: Commercial Ironworks, Port-

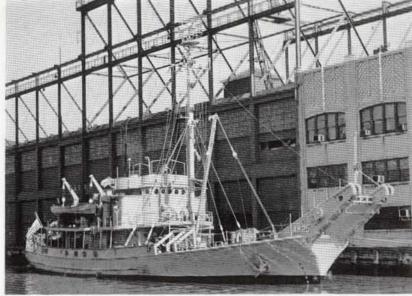
AM 25 Huracán (ex-Nahant, AN 83, ex-YN 102)

Laid down 31-3-45

L

In serv.

30-6-45 24-8-45



Huracán (AM 25)

L. & L. Van Ginderen, 1979

D: 650 tons (855 fl) S: 12.3 kts Dim: 51.36 (44.5 pp) × 10.31 × 3.3

A: Removed Electron Equipt: Radar: 1/SPS-5

M: 2 Busch-Sulzer BS539 diesels, electric drive; 1 prop; 1,200 hp Man: 48 tot.

Remarks: Former netlayer. Transferred in 12-68. A decompression chamber for divers is carried.

Bldr: . . . , Glasgow, Scotland 1 miscellaneous service tender

AM 26 VANGUARDIA (ex-Balizador) (In serv. 1908)

D: 95 tons S: 12 kts Dim: . . . × . . . × . . .

M: 1 set triple-expansion reciprocating steam; 1 prop; 200 hp

Remarks: Employed on hydrographic survey duties; white hull, buff upper works.

Note: A craft named Oyarvide is also in naval service, function and characteristics not available. A 15-m tender, 71 (ex-PS 1), is used as a tug.

1 sail-training ship

20 CAPITAN MIRANDA (ex-GS 20)

Bldr Soc. Española de Construcción Naval, Matagorda, Cádiz, Spain In serv. 1930



Capitan Miranda (20) - number not borne

URUGUAY (continued) AUXILIARY SHIPS (continued)

D: 516 tons (550 fl) S: 11 kts Dim: 54.6 (61.0 bowspirit/45.0 pp) \times 8.4 \times 3.2 Electron Equipt: Radar: 1/Decca TM 1226C

M: 1 M.A.N. diesel; 1 prop; 500 hp Fuel: 45 tons Man: 49 tot.

Remarks: Originally built as a hydrographic survey ship. Refitted and rigged as a three-masted schooner for cadet training, recommissioning 1978.

COAST GUARD (PREFECTURA MARITIMA)

The Uruguayan Coast Guard has 100 officers and about 1,900 enlisted men. Primarily intended for a shore-based coast watch and port police function, it does operate three 13-m patrol boats, three 9-m patrol craft, and a number of outboard-motor-powered semi-inflatable rubber boats; all have pendant numbers beginning with PM, PS, etc.

VANUATU

PERSONNEL: . . .

MERCHANT MARINE: 21 ships - 89,591 grt (1 tanker - 2,999 tons)

PATROL BOATS

♦ 0 (+1) Australian ASI 315 class Coogie, Western Australia (In serv. 1987)

N. .

D: 165 tons (fl) **S:** 20 kts **Dim:** 31.5 (28.6 wl) \times 8.1 \times 2.12

A: . . . Electron Equipt: Radar: 1/Furuno 1011

M: 2 Caterpillar 3516 diesels; 2 props; . . . hp Electric: . . .

Range: 2,500/12 Fuel: 33 tons Man: 3 officers, 14 men

Remarks: Provided by Australian foreign aid. Sisters being built for other Southwest Pacific nations. See illustration under Papua New Guinea.

♦ 1 patrol boat, former yacht

Mala (In serv. . . .)



Mala

L. & L. Van Ginderen, 5-85

REMARKS: No data available.

VENEZUELA

Republic of Venezuela

Personnel: (1985): 7,500 men, including 4,000 marines

Merchant Marine (1984): 250 ships - 1,003,381 grt

(tankers: 26 ships - 562,072 grt)

NAVAL AVIATION: The small naval aviation component operates 4 Casa 212A Aviocar, one de Havilland Dash-7, and one transport, 2 Beech King Air 98 light and one Turbo Commander transports, one Cessna 337 liaison aircraft, and twelve Agusta-Bell AB-212 helicopters.

The newly established Coast Guard operates four HU-16A Albatross amphibians for maritime surveillance, as well as four Casa C-212 light transports.

SUBMARINES

◆ 2 German Type 209 Bldr: Howaldtswerke, Kiel

Laid down L In serv. S-31 Sabalo 2-5-73 1-17-75 6-8-76 S-32 Carite 1-8-73 6-11-75 11-3-77



Sabalo (S-31)

Howaldtswerke, 1979

D: 990/1,290 tons **S:** 11/22 kts **Dim:** $56.10 \times 6.20 \times 5.50$

A: 8/533-mm TT — 14 U.S. Mk 37 and West German SST-4 torpedoes

M: Diesel-electric propulsion: 4 MTU Type 12V492 Tb90, 600-hp diesels; 4/405-kw generators; Siemens electric motor; 5,000 hp

Fuel: 100 tons Range: 7,800/8 surf.; 400/4 sub. Man: 5 officers, 26 men

Remarks: Ordered 1971: S 31 damaged by fire in 1979, overhauled at Kiel. A planned second pair were apparently not ordered. S-32 refitted by builder 1984.

• 1 ex-U.S. GUPPY II

Bldr Laid down L In serv. SS-22 Picua (ex-Grenadier, SS 525) Boston Naval SY 8-2-44 15-12-44 10-2-51



Picua (S-22)

R. Scheina, 7-84

D: 2,040/2,420 tons **S:** 18/16 kts **Dim:** $93.57 \times 8.33 \times 5.18$

A: 10/533-mm TT (6 fwd, 4 aft) Electron Equipt: Radar: 1/SS-2—Sonar: BQR-2

M: Fairbanks-Morse 38D81/4 diesels, electric drive; 2 props; 4,160 hp Man: 82 tot.

Remarks: Purchased 15-5-73. Unusual in having been completed as a GUPPY II. Four 126-cell batteries. Sister Tiburon (S 21, ex-Cubera, SS 347) stricken 1979. S-22 was overhauled at Punta Belgrano Naval SY, Argentina, from 1979 to 7-81, but is in marginal operating condition. To be refitted for further service.

GUIDED-MISSILE FRIGATES

♦ 6 Italian Lupo class Bldr: CNR, Riva Trigoso and Ancona(*), Italy

| | Laid down | L | In serv. |
|---|-----------|---------|----------|
| F-21 Mariscal Sucre | 4-10-77 | 28-9-78 | 14-7-80 |
| F-22 Almirante Brion | 26-1-78 | 22-2-79 | 7-3-81 |
| F-23 General Urdaneta* | 23-1-78 | 23-3-79 | 8-8-81 |
| F-24 General Soublette | 26-8-78 | 4-1-80 | 4-12-81 |
| F-25 General Salom* | 7-11-78 | 13-1-80 | 3-4-82 |
| F-26 Almirante José M. Garcia (ex- General José Felix Ribas) | 21-8-79 | 4-10-80 | 30-7-82 |

D: 2,213 tons (2,525 fl) S: 35 kts (20.5 on diesels)

Dim: 112.8 (106.0 pp) × 11.98 × 3.84 (hull)

A: 8/Otomat Mk II SSM (I × 8) — 1/Albatros SAM system (VIII × 1, 8 Aspide missiles) — 1/127-mm OTO Melara DP — 4/40-mm Breda Dardo AA (II × 2) — 6/324-mm Mk 32 ASW TT (III × 2, for A244 torpedoes) — 1/AB-212 ASW helicopter



General Urdaneta (F-23) - AB 212 helo on deck

R. Scheina, 7-84

GUIDED-MISSILE FRIGATES (continued)



Almirante José M. Garcia (F-26) - on trials

G. Arra, 1981

Electron Equipt: Radar: 1/3RM-20 navigational, 1/RAN-11/X air and surface search, 1/RAN-10S air search, 2/Orion RTN-10X, 2/Orion RTN-20X—TACAN: SRN-15A
Sonar: Edo 610E—EW: Lambda-F, 2/SCLAR chaff RL

(XX × 2) M: CODOG: 2 Fiat G.E. LM-2500 gas turbines, 25,000 hp each; 2 GMT A230-2M diesels, 3,900 hp each; 2 CP props

Electric: 3,120 kw Range: 900/35; 1,050/31.7; 5,500/16 Man: 185 tot.

Remarks: Ordered 24-10-75. Fin stabilizers fitted. Gun (127-mm) and missile fire control by two Elsag NA-10 Mod. 0 systems. The Albatros system uses Aspide missiles, a re-engineered version of NATO Sea Sparrow. Each twin 40-mm Dardo system antiaircraft mount has an associated RTN-20X radar director. All weapons controlled by a Selenia IPN-10 computerized data system. Fixed, nontelescopic hangar. Near-sisters in the Iraqi, Italian, and Peruvian navies.

Note: The two surviving Almirante Clemente-class frigates have been transferred to the Coast Guard.

AMPHIBIOUS WARFARE SHIPS

| 4 tank landing ships | | Bldr: Korea-Tacoma SY, Masan, S. Korea | | | |
|--|---------|--|-----------------|---|----------|
| | L | In serv. | | L | In serv. |
| T-61 CAPAÑA | 25-3-83 | 21-6-84 | T-63 Goajira | | 11-84 |
| T-62 Esequibo | 25-3-83 | 21-6-84 | T-64 Los Llanos | | 11-84 |



Capaña (T-61) - without armament

G. Gyssels, 2-85

D: 1,800 tons light (3,770 fl) S: 15 kts Dim: $104.0 \times 15.4 \times 3.0$ (4.2 max.) A: 3/40-mm AA ($I \times 3$) — 2/20-mm AA ($I \times 2$)

Electron Equipt: Radar: . . .

M: 2 diesels; 2 props; 5,600 hp Electric: 750 kw

Range: 7,500/13 Man: 13 officers, 104 men + troops: 10 officers, 192 men

Remarks: Ordered 8-82. Cargo: 1,800 tons maximum, 690 tons beaching load. Improved version of U.S. WW II-era LST. Have an elevator to the upper deck and a 50-ton tank turntable on the tank deck. Sisters in the Indonesian Navy. T-61, 62 arrived 10-84 in Venezuela, T-63 in 12-84, and T-64 early in 1985; all delivered without armament. Have a helicopter deck aft.

• 1 ex-U.S. Terrebonne Parish-class landing ship

Bldr: Ingalls, Pascagoula

T-51 AMAZONAS (ex-Vernon County, LST 1161)

Laid down 14-4-52 L 1952 In serv. 1954



Amazonas (T-51)

1977

D: 2,590 tons (5,786 fl) **S:** 13 kts **Dim:** $117.35 \times 16.76 \times 5.18$ **A:** 6/76.2-mm DP (II \times 3) **Electric:** 600 kw

Electron Equipt: 1/Decca navigational, 1/SPS-21, 2/SPG-34 M: 4 G.M. 16-278A diesels; 2 CP props; 6,000 hp Man: 116 tot.

Range: 6,000/9 Fuel: 1,060 tons

Remarks: Loaned 29-6-73, purchased outright 30-12-77. Cargo: 2,200 tons vehicles and stores, 395 troops. Two Mk 63 radar GFCS. Normally carries 2 LCVPs. Went aground 6-8-80 at St. Lucia in a hurricane but was salvaged. To be refitted.

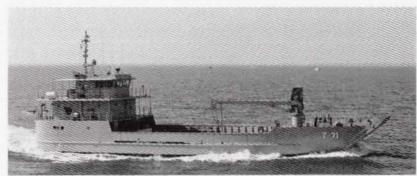
Note: The U.S. Achelous-class former light repair ship, Guyana (T-31, ex-Quirinas, ARL 39, ex-LST 1151) was stricken 22-8-84. The U.S. LSM 1-class medium landing ship Los Frailes (T-23, ex-LSM 544) was stricken after a fire, 21-6-84.

* 2 utility landing craft

Bldr: Swiftships, Morgan City, La. (In serv. 1984)

T-71 Margarita (In serv. 1-84)

T-72 La Orchila (In serv. 5-84)



Margarita (T-71)

Swiftships, 3-84

D: 428 tons (fl) S: 13 kts Dim: 39.62 × 10.97 × 1.30

A: None Electron Equipt: Radar: 1/. . . nav.

M: 2 G.M. Detroit Diesel 16V149 N diesels; 2 props; 1,800 hp Range: 2,500/10 Fuel: 64 tons Man: 4 officers, 17 men

Remarks: Aluminum construction. Cargo: vehicles, supplies, up to 108 tons fuel and 149 tons water. Bow ramp, 15-ton crane on bow. Carries 156 tons ballast. Intended for coastal and riverine use. Four more planned.

♦ 12 U.S. LCVP-class landing craft Bldr: Dianca, Puerto Cabello, 1976-77

D: 12 tons (fl) S: 9 kts Dim: 10.9 × 3.2 × 1.0 M: 1 diesel; 1 prop; 225 hp Range: 110/9

Remarks: Follow design of U.S.-built LCVP. Several other LCVP and LCPL transferred with U.S. Navy ships probably also survive.

AUXILIARY SHIPS

1 ex-U.S. Cohoes-class survey ship
 Bldr: Commercial Iron Works, Port-land Ore.

H-11 PUERTO SANTO Laid down L In serv. (ex-Marietta, AN 82, ex-YN 101)

D: 650 tons (855 fl) S: 12 kts Dim: 48.2 (44.5 wl) × 10.3 × 3.6 A: 3/20-mm AA

M: 2 Busch-Sulzer BS 539 diesels, electric drive; 1 prop; 1,500 hp Electric: 240 kw Fuel: 110 tons Man: 46 tot.

Remarks: Ex-net tender. Transferred 1-61 under Military Aid Program; purchased outright 30-12-77. Converted for use as a hydrographic survey ship in 1962 by U.S. Coast Guard Yard, Curtis Bay, Md. Original bow horns removed, reducing overall length from 51.4 meters. Retains 12-ton boom forward. Bridge superstructure raised one deck. A replacement, to be named Francisco de Miranda, entered the planning stage in 5-84.

♦ 2 Gabriela-class survey craft

Bldr: Abeking & Rasmussen, Lemwerder, West Germany

| | Laid down | L | In serv. |
|----------------|-----------|----------|----------|
| P-119 GABRIELA | 10-3-73 | 29-11-73 | 5-2-74 |
| P-121 LELY | 28-5-73 | 12-12-73 | 7-2-74 |

AUXILIARY SHIPS (continued)

D: 90 tons (fl) S: 20 kts Dim: 27.0 × 5.6 × 1.5 M: 2 MTU diesels; 2 props; 2,300 hp Man: 16 tot.

REMARKS: Civilian-manned.

♦ 1 former merchant ship Bldr: . . .

T. . . PUERTO CABELLO (ex-Sierra Nevada)

D: . . . S: . . . Dim: . . . × . . . × . . .

Remarks: Acquired late 1985 for use as a naval transport to replace Las Aves; no data vet available.

Bldr: Canadian Vickers, Montreal (In serv. 1 Maracaibo-class cargo ship 1953)

T-42 VALENCIA (ex-Ciudad de Valencia)

D: Approx. 8,100 tons (fl) S: 15 kts Dim: 128.15 × 16.76 × 6.78

M: 1 Nordberg diesel; 1 prop; 4,275 hp

Man: 7 officers, 50 men

REMARKS: 4,297 grt/5,885 dwt. Transferred from State Shipping Co. in 1977. Five cargo holds. Additional superstructure added on stern to increase accommodations. Refitted 1982 at Port Everglades, Florida.

Note: The fleet tugs of the U.S. Achomawi class have been transferred to the Coast Guard. The small transport-cum-presidential yacht Las Aves (T-11) was stricken during 1983.

Bldr: Ast. Celeya, Bilbao, Spain 1 sail-training ship

Laid down L In serv. 21-9-79 14-8-80 5-6-79 SIMÓN BOLÍVAR



Simón Bolívar

P. Roullet, 1981

D: 1,200 tons (fl) **S:** 10.5 kts **Dim:** 82.5 (58.5 pp) \times 10.6 \times 4.2

M: 1 G.M. 12V149 diesel; 1 prop; 750 hp

Man: 17 officers, 75 men, 18 instructors, 84 cadets

Remarks: 934 grt. Sister to Ecuadorian Guayas. Three-masted bark; sail area: 1,650 m2. Ordered 7-78.

SERVICE CRAFT

Bldr: Dianca, Puerto Cabello, 1978 ♦ 1 large harbor tug

S: . . . Dim: . . . × . . . × . . . M: 2 Werkspoor diesels; 2 props; 1,600 hp

REMARKS: Ordered 1973. Used for Navy by Dianca SY. Three sisters operated by Ministry of Communications: C-139, C-140, C-141.

♦ 1 ex-U.S. medium harbor tug Bldr: Ramsey & Sons, New Orleans, La.

R-11 Fernando Gomez (ex-Dudley, YTM 744)

D: 161 tons S: 15 kts Dim: 24.5 × 5.8 × 2.4

A: 2/12.7-mm mg (I × 2) M: 1 Clark 6-cyl. diesel; 1 prop; 380 hp

Remarks: Built 1938. Acquired by U.S. Navy 1-42; sold to Venezuela 1-47.

♦ 1 ex-U.S. floating repair barge Bldr: Mare Isl. NSY, Cal. (L: 30-5-43)

. . . (ex-YR 48)

D: 520 tons (770 fl) Dim: 46.6 × 13.1 × 2.1 Electric: 220 kw Fuel: 75 tons Man: 46 tot.

Remarks: Leased 7-61; purchased outright 30-12-77.

♦ 1 floating crane—Capacity: 40 tons

 1 small service craft Bldr: Ast. Lago Maracaibo (In serv. 5-80) ANGU-01

 3 service launches Bldr: American SB & Design, Miami, Fla.

MTC-6 (In serv. 31-10-83) MTC-7 (In serv. 15-12-83) MTC-8 (In serv. 26-2-84)

D: 4.8 tons (fl) **S:** 32 kts **Dim:** 10.06 (9.19 pp) \times 3.35 \times 0.76

M: 2 G.M. diesels; 2 props; 550 hp Range: 450/. . .

Remarks: Glass-reinforced plastic construction.

VENEZUELAN COAST GUARD

The Venezuelan Coast Guard was established in 8-82 to patrol the 200-nautical-mile economic zone. Initially operating only four Cessna 210 light aircraft, it has now received a number of former Venezuelan Navy vessels, as well as four CASA Aviacar maritime-patrol-configured light transports, four former naval HU-16 Albatross amphibians, and six former naval S-2E Tracker aircraft (the latter discarded 2-85). The Coast Guard is headquartered at Puerto Cabello under the Ministry of the Navy and is commanded by a rear admiral.

FRIGATES

◆ 2 Almirante Clemente class Bldr: Ansaldo, Livorno Laid down In serv. F-11 GENERAL JOSÉ TRINIDAD MORAN 12-12-54 5-5-54 1956 F-12 ALMIRANTE CLEMENTE 5-5-54 12-12-54 1956



Almirante Clemente (F-12) - refitting at Genoa

C. Martinelli, 1984

D: 1,300 tons (1,500 fl) **S:** 22 kts **Dim:** $97.6 \times 10.84 \times 2.6$

A: 2/76-mm OTO Melara DP (I × 2) -2/40-mm AA (II × 2) -6/324-mm Ilas-3 ASW TT $(III \times 2)$

Electron Equipt: Radar: 1/Decca 1226, 1/Plessey AWS-2, 1/Orion RTN-10X Sonar: Plessey MS-26

M: 2 G.M.T. 16-645E7CA diesels; 2 props; 6,000 hp Range: . . . Fuel: 350 tons

Man: 12 officers, 150 men

Remarks: Survivors of a class of six: General José de Austria stricken 1976, General José Garcia stricken 1977, and General Juan José Flores and Almirante Brion stricken 1978. Both were extensively refitted by Cammell Laird, Birkenhead, from 1968 to 1975-76 (much delay caused by financial and labor problems). New radars, sonar, and armament fitted, with OTO Melara Compact mounts replacing the original four 102-mm dual-purpose (II × 2). Have NA-10 GFCS for the 76-mm guns and a leadcomputing sight for the 40-mm AA mount. When new, could make 32 knots. Very lightly built, with much use of aluminum alloy. Denny-Brown fin stabilizers. Being re-engined by C.N.R., Genoa, Italy, with diesels 10-84 to 27-7-85 and transferred to the new Coast Guard.

PATROL BOATS

Bldr: Vosper Thornycroft, Portsmouth, U.K. • 6 Constitución class

| | Laid down | L | In serv |
|--------------------|-----------|---------|---------|
| P-11 Constitución | 1-73 | 1-6-73 | 16-8-74 |
| P-12 Federación | 8-73 | 26-2-74 | 25-3-78 |
| P-13 Independencia | 2-73 | 24-7-73 | 20-9-74 |
| P-14 LIBERTAD | 9-73 | 5-3-74 | 12-6-78 |
| P-15 Patria | 3-73 | 27-9-73 | 9-1-78 |
| P-16 VICTORIA | 3-73 | 3-9-74 | 22-9-75 |
| | | | |

D: 150 tons (170 ft) **S:** 31 kts **Dim:** 36.88 (33.53 wt) \times 7.16 \times 1.73

A: P-11, P-13, P-15: 1/76-mm OTO Melara Compact

P-12, P-14, P-16: 2/Otomat Mk I SSM (I × 2) - 1/40-mm AA

Electron Equipt: 1/SPQ-2D; P-11, P-13, P-15: 1/Orion RTN-10X also M: 2 MTU MD 16V538 TB90 diesels; 1 prop; 7,080 max. hp/5,900 sust. hp Electric: 250 kw Range: 1,350/16 Man: 3 officers, 14 men

Remarks: Ordered 4-72. All equipped with Vosper fin stabilizers. New hull numbers assigned 1978. Maximum sustained speed is 27 knots. NA-10 Mod. 1 GFCS in 76-mm gun-equipped boats. Transferred from the Navy, 1983. All to be refitted.

PATROL BOATS (continued)



Federación (P-12) - missile version



Constitución (P-11) - 76-mm gun version

Vosper, 1975

♦ 2 ex-U.S. Achomawi-class fleet tugs Bldr: Charleston SB & DD, S.C.

| | Laid down | L | In serv |
|---|-----------|---------|---------|
| R-21 FELIPE LARRAZABEL (ex-Utina, ATF 163) | 6-6-45 | 31-8-45 | 30-1-46 |
| R-23 MIGUEL RODRIGUEZ | 13-4-45 | 20-7-45 | 11-9-48 |



Miguel Rodriguez (R-23)

L. & L. Van Ginderen, 5-81

D: 1,235 tons (1,675 fl) **S:** 16.5 kts **Dim:** 62.48 (59.44) \times 11.74 \times 4.67 **A:** R-21 only: 1/76.2-mm DP **Electron Equipt:** Radar: 1/SPS-53 M: 4 G.M. 16-278A diesels, electric drive; 1 prop; 3,000 hp Electric: 400 kw Fuel: 300 tons Range: 7,000/15 Man: 85 tot.

Remarks: R-21 loaned 3-9-71; purchased outright 30-12-77. R-23 purchased 1-9-78. Sister Antonio Picardi (R-22, ex-Nipmuc, AFT 157), ran aground and was lost 12-4-82. R-21 and R-23 transferred to Coast Guard in 1983, where they are used in patrol duties.

Note: Former trawler LG-12 was commissioned for Coast Guard use as a patrol boat in early 1984; no data available. A widely reported order for five Picchiotti of Italy 41.8-m patrol boats has not yet materialized.

NATIONAL GUARD

PATROL CRAFT

| ◆ 12 42-ft design | Bldr: MonArk Workboats, Mo | nticello, Ark., U.S.A. |
|---------------------------------------|----------------------------|------------------------|
| | In serv. | In serv. |

| In serv. | | In serv. |
|----------|---------------------------------------|--|
| 2-7-84 | B-8427 Rio Sarare | 4-9-84 |
| 2-7-84 | B-8428 RIO URIBANTE | 4-9-84 |
| 1-8-84 | B-8429 Rio Cinaruco | 1-11-84 |
| 1-8-84 | B-8430 Rio Icabara | 1-11-84 |
| 30-8-84 | B-8431 Rio Guarico II | -84 |
| 30-8-84 | B-8432 Rio Yaracuy | -84 |
| | 2-7-84 1-8-84 1-8-84 30-8-84 | 2-7-84 B-8427 RIO SARARE 2-7-84 B-8428 RIO URIBANTE 1-8-84 B-8429 RIO CINARUCO 1-8-84 B-8430 RIO ICABARA 30-8-84 B-8431 RIO GUARICO II |



Rio Catatumbo II (B-8422)

MonArk, 7-84

D: 15 tons (fl) S: 28 kts Dim: 13.03 (12.55 pp) × 4.47 × 1.17 A: 3/12.7-mm mg Electron Equipt: Radar: 1/Raytheon 1900 M: 2 G.M. Detroit Diesel 8V92 T diesels; 2 props; 1,100 hp Range: 600/. . . Electric: 10.5 kw Man: 4 tot.

Remarks: Aluminum construction. For river and lake patrol. Replace 12 French-built craft delivered 1970-77.

♦ 10 21-ft design Bldr: MonArk Workboats, Monticello, Ark., U.S.A.

| A-6901 Lago 1 | A-7918 Rio Cabriales | A-7921 Rio Tuy |
|---------------|----------------------|----------------------|
| A-6902 Lago 2 | A-7919 Rio Chama | A-7929 RIO MANATI |
| A-6903 Lago 3 | A-7920 Rio Caribe | A-8223 Rio Goaigoaza |
| A-6904 Lago 4 | | |



21-ft. design - outboard motors not fitted

MonArk, 1984

D: 1.25 tons (fl) **S:** 30 kts **Dim:** $6.02 \times 2.36 \times 0.33$

A: 1/12.7-mm mg Man: 4 tot.

M: 2 Evinrude gasoline outboard motors; 230 hp

REMARKS: Aluminum construction. For river and lake patrol. Equipped with pushknees to act as pusher tugs.

◆ 15 18-ft chase boat design Bldr: MonArk Workboats, Monticello, Ark., U.S.A. (In serv. 11-1-85)

D: 0.5 tons (fl) **S:** 30 kts **Dim:** $5.48 \times 2.08 \times 0.15$

A: 1/12.7-mm mg Man: 4 tot. M: 1 Evinrude gasoline outboard motor; 140 hp

Remarks: Aluminum construction.

VENEZUELA (continued) PATROL CRAFT (continued)



18-ft. chase boat

MonArk, 1985

♦ 12 U.S. design

Bldr: Robert E. Direcktor SY, Mamaroneck, N.Y.

A-8201 PUNTA PERET A-8202 PUNTA MULATO A-8203 Punta Barima A-8204 Punta Mosquito A-8205 PUNTA PLAYA A-8206 Punta Mulatos

A-8207 PUNTA BALLENA A-8208 Punta Macuro A-8209 Punta Mariusa A-8210 Punta Moron A-8211 Punta Macoya A-8212 Punta Cardon



"Punta" class - ramp stern version

F. Nakajima/Direcktor SY, 1984

D: Approx. 50 tons (fl) S: 28.5 kts Dim: 23.44 × 4.88 × . . . Electron Equipt: Radar: 1/Furuno . . . Electric: 60 kw M: 2 G.M. 12V92M TI diesels; 2 props; 1,950 hp Range: 1,100/22 Man: 10 tot.

Remarks: First six ordered 1980, delivered 8-82; second six ordered 1982 and delivered by 10-84. Aluminum construction. Of the first increment, three have a small helicopter platform aft, and three have ramps for landing small vehicles.

Note: The National Guard is also acquiring numbers of 11.6-m "Batalla del Lago" and 8.5-m "General José Antonio Piez"-class glass-reinforced plastic-hulled patrol craft built in Venezuela by Yamaha Fibra, C.A. Numbers built and characteristics are unavailable.

♦ 21 Rio Orinoco class Cabello (In serv. 1974-78)

Bldr: C87-96: INMA, La Spezia; others: Dianca, Puerto

| C-87 Rio Orinoco | C-94 Rio San Juan | C-132 Rio |
|--------------------|-----------------------|-----------|
| C-88 RIO VENTUARI | C-95 Rio Tucuyo | C-133 Rio |
| C-89 RIO CAPARO | C-96 Rto Turbio | C-134 Rio |
| C-90 RIO VENAMO | C-128 Rio Guaicaipuro | C-135 Rio |
| C-91 Rio Torres | C-129 Rio Tamanco | C-136 Rio |
| C-92 RIO ESCALENTE | C-130 RIO MANAURE | C-137 Rio |
| C-93 Rio Limon | C-131 Rio Ara | C-138 Rio |

D: 65 tons (fl) S: 31 kts Dim: 28.3 × 4.8 × 1.5

A: 1/12.7-mm mg M: 2 MTU 12V 493 TY diesels; 2 props; 2,200 hp Range: 500/. . . Man: 8 tot.

Remarks: Wooden construction.

• 17 U.S. Enforcer class

Bldr: Bertram Yacht, Miami, Fla.

Remarks: Four of the 11.6-m version delivered 1978, ten more in 1980. One 14.0-m version and two 13.4-m version delivered 1980. All have outdrive motors and glassreinforced plastic hulls. A: Small arms.

VIETNAM

Socialist Republic of Vietnam

Personnel (1985): Approx. 6,000 total

Merchant Marine (1984): 119 ships - 278,899 grt

(tankers: 13 ships - 37,361 grt)

Note: The following listings include ships known to have been in North Vietnamese service in 1975, those units left behind in South Vietnam that did not escape the communist victory, and a number of ships known to have been turned over to Vietnam by the Soviet Union since 1975. The operability of much of the former U.S. equipment is questionable, but several of the larger units have been seen at sea. New ships names

NAVAL AVIATION: Three Soviet Beriev Be-12 Mail antisubmarine patrol amphibians were delivered in 1981 for coastal surveillance duties, and there may be up to 10 Mi-4 helicopters.

FRIGATES

• 5 ex-Soviet Petya-II class

HQ 09 HQ. . . HQ. . . HQ. . .



Petya II of the Vietnamese Navy

U.S. Navy, 7-79

D: 950 tons (1,150 fl) S: 30 kts Dim: 82.3 × 9.1 × 3.2

A: 4/76.2-mm DP (II × 2) - 3/533-mm TT (III × 2) - 4/RBU-2500 ASW RL (XVI × 4) -2/d.c. racks - mines

Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Hawk Screech Sonar: 1/high frequency-EW: 2/Watch Dog

M: CODAG: 2 gas turbines, 15,000 hp each; 1 diesel, 6,000 hp; 3 props Range: 4,000/10 (diesel); 500/30 (CODAG) Man: 80-90 tot.

Remarks: Of the same export version as has been transferred to India and Syria. Two transferred 12-78, two transferred 1-83, one transferred 12-84; the last three had 2/RBU 6000 ASW RL and 5/400-mm ASW TT (V × 1).

1 ex-U.S. Savage-class former radar picket

Bldr: Consolidated Steel Corp., Orange, Texas

| | Laid down | L | In serv. |
|---|-----------|----------|----------|
| HQ 03 Dai Ky | 31-8-43 | 13-11-43 | 25-1-44 |
| (ex-Tran Khahn Du. ex-Forster, DER 334) | | | |

D: 1,590 (1,850 fl) S: 20 kts Dim: 93.3 (91.4 wl) × 11.2 × 4.3 (hull) A: 2/76.2-mm DP (I × 2) - 1/81-mm mortar - 2/127-mm mg (I × 2)

Electron Equipt: Radar: 1/SPS-10, 1/SPS-29, 1/SPG-34 Sonar: SQS-29 series

M: 4 Fairbanks-Morse 38D81/s diesels; 2 props; 6,000 hp Electric: 580 kw Fuel: 310 tons Range: 10,000/15 Man: Approx. 170 tot.

Remarks: Transferred to South Vietnam 25-9-71. Was in overhaul at Saigon in 1975 and has been reactivated by the new government. Mk 63 radar GFCS forward, Mk 51 Mod. 2 optical GFCS aft. Additional AA guns probably added.

♦ 1 ex-U.S. Barnegat class

Bldr: Lake Washington SY, Houghton, Wash.

Laid down L HQ 06 N. . . 23-7-41 8-3-42 28-1-43 (ex-Tham Ngu Lao, ex-U.S.C.G. Absecon, WHEC 374, ex-AVP 23)

D: 1,766 tons (2,800 ft) S: 18 kts Dim: 94.7 (91.4 wl) \times 12.5 \times 4.1 A: 1/127-mm 38-cal, DP - 2/81-mm mortars (I \times 2)

Electron Equipt: Radar: 1/SPS-21, 1/SPS-29, 1/Mk 26

M: 4 Fairbanks-Morse 38D8% diesels; 2 props; 6,080 hp Electric: 600 kw

Fuel: 26 tons Range: 20,000/10

Man: Approx. 200 tot.

REMARKS: Transferred to South Vietnam in 1971, having served in the U.S. Coast Guard since 1948. Believed to have been made operational by Vietnam. Has probably had 37-mm AA added to armament and reportedly has been equipped with 2 SS-N-2A Styx missiles removed from a stricken Komar-class unit.

CORVETTES

2 ex-U.S. Admirable-class former fleet minesweepers

| | Bldr | Laid down | L | In serv. |
|-----------------------------------|---|-----------|---------|----------|
| HQ (ex-Ky Hoa, ex-Sentry, | Winslow Marine Railway, Winslow, Wash. | 16-5-43 | 15-8-43 | 30-5-44 |
| MSF 299) HQ-07 (ex-Ha Hoi, ex- | Gulf SB. Chickasaw, La. | 15-9-43 | 17-2-44 | 27-9-44 |

Prowess, IX 305, ex-MSF

D: 650 tons (945 fl) **S:** 14.8 kts **Dim:** 56.2 (54.9 wl) \times 10.1 \times 3.0 **A:** 2/57-mm AA (II \times 1) — 2/37-mm AA (I \times 2) — 6/23-mm AA (II \times 3) Electron Equipt: Radar: 1/SPS-53

CORVETTES (continued)

M: 2 Cooper-Bessemer GSB-8 diesels; 1,710 hp Electric: 280 kw Man: Approx. 80 tot.

REMARKS: Transferred to South Vietnam 8-62 and 6-70, respectively. All minesweeping gear removed before transfer, and antisubmarine warfare gear removed during overhauls in early 1970s. At least one, now numbered HG 07, is operational, rearmed with Soviet or Chinese weapons.

GUIDED-MISSILE PATROL BOATS

. 8 Soviet Osa-II class

D: 215 tons (245 fl) S: 35 kts Dim: 38.6 × 7.6 × 2.0 A: 4/SS-N-2B Styx (I \times 4) — 4/30-mm AA (II \times 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 2/Square Head, 1/High Pole B

M: 3 M-504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Transferred: 2 in 10-79, 2 in 9-80, 2 in 11-80, and 2 in 2-81.

TORPEDO BOATS

16 Soviet Shershen class



Shershen, with torpedo tubes, under tow to Vietnam

U.S. Navy, 9-79

D: 135 tons (170 fl) S: 45 kts Dim: 34.7 × 6.7 × 1.5

A: 4/30-mm AA (II × 2) -4/533-mm TT-2/d.c. racks (12 d.c.)

Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt-IFF: 1/High Pole A, 1-2/Square Head

M: 3 M503A diesels; 2 props; 12,000 hp Range: 460/42; 850/30 Man: 19 tot.

Remarks: Transferred: 2(without torpedo tubes) on 16-4-79, 2 on 12-9-79, 2 in 8-80, 2 in 10-80, 2 in 1981 and 4 in 6-83.

PATROL BOATS

• 2 Soviet Turva-class semi-hydrofoils Bldr: Ulis SY, Vladivostok

D: 210 tons (245 fl) S: 40 kts Dim: 39.0 × 7.6 (12.5 over foils) × 2.0 (4.0 over foils)

A: 2/57-mm DP aft (II × 1) -2/25-mm AA fwd. (II × 1)

Electron Equip : Radar: 1/Pot Drum, 1/Muff Cob IFF: 1/High Pole B, 1/Square Head

M: 3 M504 diesels; 3 props; 15,000 hp Range: 400/38; 650/25 Man: 24 tot.

Remarks: One transferred 5-84, the second in 11-84; neither had torpedo tubes or the standard helicopter-type dipping sonar.

• 6 Soviet Zhuk class

D: 48 tons (60 fl) S: 34 kts Dim: 24.0 × 5.0 × 1.2

A: 4/14.5-mm AA (II × 2) Electron Equipt: Radar: 1/Spin Trough

M: 2 M50-F diesels; 2 props; 2,400 hp Range: 700/28; 1,100/15 Man: 12 tot.

Remarks: Transferred: 3 in 1978, 3 in 1979, and one in 5-85.

• up to 17 PGM 59 and PGM 71 class

Bldrs: ex-PGM 59 to ex-PGM 63: J. M. Martinac SB, Seattle, Wash.; ex-PGM 64 to ex-PGM 69: Marinette Marine, Marinette, Wisc.; others: Peterson Bldrs., Sturgeon Bay, Wisc. (In serv. 1963-67)

ex-HQ 600 ex-Phu Du (ex-PGM 64) ex-HQ 601 ex-Tien Mot (ex-PGM 65) ex-HQ 602 ex-Minh Hoa (ex-PGM 66) ex-HQ 603 ex-Kien Vang (ex-PGM 67) ex-HQ 606 ex-May Rut (ex-PGM 59)

ex-HQ 611 ex-Truong Sa (ex-PGM 70) ex-HQ 612 ex-Thai Binh (ex-PGM 72) ex-HQ 613 ex-THI TU (ex-PGM 73) ex-HQ 614 ex-Song Tu (ex-PGM 74) ex-HQ 615 ex-Tat Sa (ex-PGM 80)

ex-HQ 607 ex-Nam Du (ex-PGM 61) ex-HQ 608 ex-Hoa Lu (ex-PGM 62) ex-HQ 609 ex-To YEN (ex-PGM 63)

ex-HQ 616 ex-Hoang Sa (ex-PGM 82) ex-HQ 617 ex-Phu Qui (ex-PGM 81) ex-HQ 619 ex-Tho Chau (ex-PGM 91)

ex-HQ 610 ex-Dinh Hai (ex-PGM 69)

D: 102 tons light (142 fl) S: 17 kts Dim: 30.81 × 6.45 × 2.3 A: 1/40-mm AA -4/20-mm AA $(II \times 2) -4/12.7$ -mm mg $(II \times 2)$



ex-Dinh Hai (HQ 610)

1967

M: ex-PGM 59 to ex-PGM 70: 2 Mercedes Benz MB 820 Db diesels; 2 props; ex-PGM 71 to ex-PGM 91: 8 G.M. 6-71 diesels; 2 props; 2,040 hp Electric: 30 kw Fuel: 16 tons Range: 1,000/17 Man: 30 tot.

8 ex-Soviet S.O.-1 class

D: 190 tons (215 fl) S: 28 kts Dim: 42.0 × 6.1 × 1.9

A: 4/25-mm AA (II × 2) -- 4/RBU-1200 ASW RL (V × 4) -- 2/d.c. racks (24) d.c.) - mines

Electron Equipt: Radar: 1/Pot Head - Sonar: 1/high frequency M: 3 Type 40D diesels; 3 props; 7,500 hp Range: 1,100/13 Man: 30 tot.

Remarks: Transferred: 2 in 3-80, 2 in 9-80, 2 in 5-81, and 2 in 9-83. An earlier increment transferred in 1960-66 have all been discarded.

♦ 8 ex-Chinese Shanghai-II class

D: 122.5 tons normal (134.8 fl) S: 28.5 kts Dim: 38.78 × 5.41 × 1.55 hull

A: 4/37-mm AA (II × 2) -4/25-mm AA (II × 2)

Electron Equipt: Radar: Skin Head

M: 2 M50-F4, 1,200-hp diesels, 2 12D6, 900-hp diesels; 4 props; 4,220 hp Range: 750/16.5 Electric: 39 kw Endurance: 7 days Man: 36 tot.

REMARKS: Transferred: four in 1966 and four in 1968. Probably in very poor condition.

up to 26 ex-U.S. Coast Guard Point class Bay, Md. (In serv. late 1950s)

Bldr: Coast Guard Yard, Curtis

ex-HQ 700 ex-Le Phuoc Dui (ex-Pt. Garnet, WPB 82310)

ex-HQ 701 ex-Le Van Nga (ex-Pt. League, WPB 82304)

ex-HQ 702 ex-Huynh Van Cu (ex-Pt. Clear, WPB 82315) ex-HQ 703 ex-Nguyen Dao (ex-Pt. Gammon, WPB 82328)

ex-HQ 704 ex-Dao Thuc (ex-Pt. Comfort, WPB 82317)

ex-HQ 705 ex-Le Ngoc Than (ex-Pt. Ellis, WPB 82330)

ex-HQ 706 ex-Nguyen Ngoc Thach (ex-Pt. Slocum, WPB 82313)

ex-HQ 707 ex-Dang Van Hoanh (ex-Pt. Hudson, WPB 82322)

ex-HQ 708 ex-LE DINH HUNG (ex-Pt. White, WPB 82308)

ex-HQ 709 ex-Thuong Tien (ex-Pt. Dume, WPB 82325)

ex-HQ 710 ex-Pham Ngoc Chau (ex-Pt. Arden, WPB 82309) ex-HQ 711 ex-Dao Van Dang (ex-Pt. Glover, WPB 82307)

ex-HQ 712 ex-LE DGoc An (ex-Pt. Jefferson, WPB 82306)

ex-HQ 713 ex-Huynh Van Ngan (ex-Pt. Kennedy, WPB 82320)

ex-HQ 714 ex-Tran Lo (ex-Pt. Young, WPB 82303)

ex-HQ 715 ex-Bui Viet Thanh (ex-Pt. Partridge, WPB 82305)

ex-HQ 716 ex-Nguyen An (ex-Pt. Caution WPB 82301)

ex-HQ 717 ex-Nguyen Han (ex-Pt. Welcome, WPB 82329) ex-HQ 718 ex-Ngo Van Quyen (ex-Pt. Banks, WPB 82327)

ex-HQ 719 ex-Van Dien (ex-Pt. Lomas, WPB 82321)

ex-HQ 720 ex-Ho Dang La (ex-Pt. Grace, WPB 82323)

ex-HQ 721 ex-Dam Thoaj (ex-Pt. Mast, WPB 82316)

ex-HQ 722 ex-Huynh Bo (ex-Pt. Grey, WPB 82324)

ex-HQ 723 ex-Nguyen Kim Hung (ex-Pt. Orient, WPB 82319)

ex-HQ 724 ex-Ho Duy (ex-Pt. Cypress, WPB 82326)

ex-HQ 725 ex-Troung Ba (ex-Pt. Maromec, WPB 82331)



ex-Ngo Van Quyen (HQ 718)

CORVETTES (continued)

M: 2 Cooper-Bessemer GSB-8 diesels; 1,710 hp Electric: 280 kw Man: Approx. 80 tot.

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M: 3 M-504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Transferred: 2 in 10-79, 2 in 9-80, 2 in 11-80, and 2 in 2-81.

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Shershen, with torpedo tubes, under tow to Vietnam

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ex-HQ 616 ex-Hoang Sa (ex-PGM 82) ex-HQ 617 ex-Phu Qui (ex-PGM 81) ex-HQ 619 ex-Tho Chau (ex-PGM 91)

ex-HQ 610 ex-Dinh Hai (ex-PGM 69)

D: 102 tons light (142 fl) S: 17 kts Dim: 30.81 × 6.45 × 2.3 A: 1/40-mm AA -4/20-mm AA $(II \times 2) -4/12.7$ -mm mg $(II \times 2)$



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ex-HQ 704 ex-Dao Thuc (ex-Pt. Comfort, WPB 82317)

ex-HQ 705 ex-Le Ngoc Than (ex-Pt. Ellis, WPB 82330)

ex-HQ 706 ex-Nguyen Ngoc Thach (ex-Pt. Slocum, WPB 82313)

ex-HQ 707 ex-Dang Van Hoanh (ex-Pt. Hudson, WPB 82322)

ex-HQ 708 ex-LE DINH HUNG (ex-Pt. White, WPB 82308)

ex-HQ 709 ex-Thuong Tien (ex-Pt. Dume, WPB 82325)

ex-HQ 710 ex-Pham Ngoc Chau (ex-Pt. Arden, WPB 82309) ex-HQ 711 ex-Dao Van Dang (ex-Pt. Glover, WPB 82307)

ex-HQ 712 ex-LE DGoc An (ex-Pt. Jefferson, WPB 82306)

ex-HQ 713 ex-Huynh Van Ngan (ex-Pt. Kennedy, WPB 82320)

ex-HQ 714 ex-Tran Lo (ex-Pt. Young, WPB 82303)

ex-HQ 715 ex-Bui Viet Thanh (ex-Pt. Partridge, WPB 82305)

ex-HQ 716 ex-Nguyen An (ex-Pt. Caution WPB 82301)

ex-HQ 717 ex-Nguyen Han (ex-Pt. Welcome, WPB 82329) ex-HQ 718 ex-Ngo Van Quyen (ex-Pt. Banks, WPB 82327)

ex-HQ 719 ex-Van Dien (ex-Pt. Lomas, WPB 82321)

ex-HQ 720 ex-Ho Dang La (ex-Pt. Grace, WPB 82323)

ex-HQ 721 ex-Dam Thoaj (ex-Pt. Mast, WPB 82316)

ex-HQ 722 ex-Huynh Bo (ex-Pt. Grey, WPB 82324)

ex-HQ 723 ex-Nguyen Kim Hung (ex-Pt. Orient, WPB 82319)

ex-HQ 724 ex-Ho Duy (ex-Pt. Cypress, WPB 82326)

ex-HQ 725 ex-Troung Ba (ex-Pt. Maromec, WPB 82331)



ex-Ngo Van Quyen (HQ 718)

PATROL BOATS (continued)

D: 64 tons (67 fl) **S:** 23.7 kts **Dim:** 25.3 × 5.23 × 1.95

A: 1/81-mm mortar combined with 12.7-mm mg -4/12.7-mm mg (I × 4)

M: 2 Cummins VT-12-M-700 diesels; 2 props; 1,600 hp

Fuel: 5.7 tons Range: 460/23.7; 1,400/8 Man: 12 tot.

Remarks: Had been operating in Vietnamese waters with U.S. Coast Guard crews when transferred to South Vietnam in 1969-70. Probably rearmed, if operational.

PATROL CRAFT

• 2 ex-Soviet PO 2 class

D: 50 tons (fl) **S:** 9 kts **Dim:** 21.0 × 4.5 × . . . **A:** 1/12.7-mm mg **M:** 1 diesel; 1 prop; 150 hp

Remarks: Transferred 2-80. Utility craft also useable as a tug or, with appropriate equipment, a diving tender.

• 2 ex-East German Bremse class

D: 25 tons S: 14 kts Dim: 23.0 × 5.0 × 1.1

A: . . . M: 2 diesels; 2 props; 600 hp

Remarks: Transferred late 1970s. Intended for patrol in sheltered waters and inland waterways.

 up to 107 ex-U.S. Swift Mk-1 and Mk-2 class gan City, La. (In serv. 1968-70)
 Bldr: Swiftships Inc., Morgan City, La. (In serv. 1968-70)

D: 19 tons (fl-Mk-2: 19.2) S: 25 kts

Dim: Mk-1: $15.28 \times 3.99 \times 1.07$; Mk-2: $15.64 \times 4.14 \times 1.07$

A: 1/81-mm mortar combined with 12.7-mm mg - 2/12.7-mm mg (II × 1)

M: 2 G.M. 12V71N diesels; 2 props; 860 hp Range: 400/24 Man: 6 tot.

Remarks: Transferred on completion. Most believed still serviceable. Most (approx. 90) were of the Mk-I variety, without forecastle.

RIVERINE WARFARE CRAFT

• up to 9 ex-U.S. CCB (command and control boat) class (In serv. 1969-70)



CCB class

1967

D: 160 tons light (75.5 fl) **S:** 8.5 kts **Dim:** $18.29 \times 5.33 \times 1.0$

A: 1/20-mm AA -1/12.7-mm mg -2/7.62-mm mg (I \times 2) -1/60-mm mortar

M: 2 Gray Marine 64HN9 diesels; 2 props; 450 hp

Range: 160/8 Man: 11 tot.

REMARKS: Equipped with communications facility in well, occupied by 105-mm mortar in otherwise similar LCM monitor class. Can tow disabled craft. Some had three 20-mm AA (I × 3) with an ASPB-type turret forward.

• up to 60 ex-U.S. ASPB (assault support patrol boat) class (In serv. 1969-70)

D: 30 tons light (38 fl) S: 14 kts Dim: 15.3 × 5.32 × 1.22

A: 2/20-mm AA (I \times 2) -2/76.2-mm mg (I \times 2) -2/40-mm grenade launchers

M: 2 G.M. 12V71N diesels; 2 props; 1,050 hp

Range: 200/10 Man: 5 tot.

Remarks: Two armored turrets with interchangeable armaments of one 20-mm AA, two 12.7-mm mg, or two 40-mm grenade launchers (or a combination thereof). A few had an 81-mm mortar aft in an open well.

• up to 42 ex-U.S. monitor Mk-V class (In serv. 1969-70)

D: 60.3 tons light (75.5 fl) S: 8.5 kts Dim: 18.29 × 5.33 × 1.0

A: 2/20-mm AA (I × 2) — 2/12.7-mm mg (I × 2) — 4/7.62-mm mg — 1/81-mm mortar

M: 2 Gray Marine 64HN9 diesels; 2 props; 450 hp

Range: 160/8 Man: 11 tot.

Remarks: Originally built as monitors, rather than converted as the class below. A few had a turret-mounted 105-mm howitzer in place of the bow 20-mm turret and 81-mm mortar in well. All had screen and "venetian-blind-like" bar armor to break up projectiles. Towing rig on stern of most.



Monitor Mk-V class

196

• up to 22 ex-U.S. converted LCM(6) monitors

D: 75 tons (fl) S: 8 kts Dim: 18.29 × 5.2 × 1.0

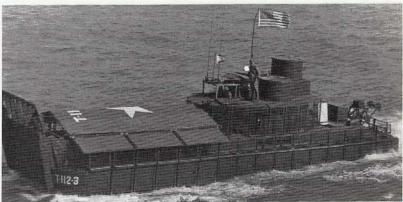
A: 1/40-mm AA (in some) -1/20-mm AA -2/12.7-mm mg (I \times 2) -1/81-mm mortar (or 2 M10-8 flame throwers)

M: 2 Gray Marine 64HN9 diesels; 2 props; 450 hp

Man: 10 tot.

REMARKS: Converted from LCM(6)-class landing craft. Transferred 1964-67.

• up to 60 ex-U.S. ATC (armored troop carriers) class



ATC class - note bar armor

1967

D: 55.8 tons light (70 fl) **S:** 8.5 kts **Dim:** $17.09 \times 5.33 \times 3.0$

A: 1/20-mm AA -2/12.7-mm mg (I \times 2) -2-6/7.62-mm mg (I \times 2-6) -2/40-mm grenade launchers (I \times 2)

M: 2 Gray Marine 64HN9 diesels; 2 props; 450 hp Man: 7 tot.

Remarks: Transferred 1969. Converted LCM(6)-class landing craft. Can carry up to 40 troops. Bow ramp. Bar armor on hull and superstructure, bullet-proof awning over troop space. A few had a small helicopter platform in place of awning. Others were configured for refueling with 4,500-liter tank in the cargo well. Four CSB (combat salvage boat) versions of the LCM(6) design were also left in Vietnam, having been transferred 1969-70.

up to 293 ex-U.S. PBR (patrol boat, riverine) Mk-II class
 Bellingham, Wash. (In serv. 1968-70)

D: 6.7 tons light (8 fl) S: 24 kts Dim: 9.73 × 3.53 × 0.6

A: 3/12.7-mm mg (II × 1, I × 1) - 1/60-mm mortar

M: 2 G.M. 6V53N diesels; 2 Jacuzzi water jets; 430 hp

Range: 150/23 Man: 4 tot.

MINE WARFARE SHIPS AND CRAFT

♦ 1 ex-Soviet Yurka-class fleet minesweeper

D: 400 tons (460 fl) S: 18 kts Dim: 52.0 × 9.3 × 2.0 Electron Equipt: Radar: 1/Don-2, 1/Drum Tilt IFF: 3/Square Head, 1/High Pole B

M: 2 diesels; 2 props; 4,000 hp Man: 45 tot.

REMARKS: Transferred 12-79. Aluminum alloy hull.

♦ 2 Soviet Yevgenya-class inshore minesweepers
Kolpino

Bldr: Svedniy Neva SY,

D: 80 tons (90 fl) **S:** 11 kts **Dim:** $26.2 \times 6.1 \times 1.5$

A: 2/14.5-mm mg (II × 1) Electron Equipt: Radar: 1/Spin Trough

M: 2 diesels; 2 props; 660 hp Range: 300/10 Man: 10 tot.

Remarks: Delivered to Cam Ranh Bay 11-84. Glass-reinforced plastic hull. Employ a television minehunting system that dispenses marker buoys to permit later disposal of the mines; useful to 30-m depths.

MINE WARFARE SHIPS AND CRAFT (continued)

• 5 ex-Soviet K-8-class minesweeping boats

D: 26 tons (fl) S: 12 kts Dim: 16.9 × 3.2 × 0.8

A: 2/14.5-mm mg (II × 1) M: 2 6D12 diesels; 2 props; 300 hp Man: 6 tot.

Remarks: Transferred 10-80. Wooden construction, built in Poland in the late-1950s.

up to 8 ex-U.S. MSB-5-class minesweeping boats (In serv. 1952-56)

D: 30 tons (42 fl) S: 12 kts Dim: 17.45 × 4.83 × 1.32

A: Several 12.7-mm mg M: 2 Packard 2D850 diesels; 2 props; 600 hp Fuel: 15.8 tons Man: 6 tot.

Remarks: Transferred 1970. Wooden construction. Two sweep-current generators; capable of sweeping magnetic, contact, and acoustic mines.

• up to 8 ex-U.S. MSR (minesweeper, riverine) class (In serv. 1970)

D: 30 tons light (38 fl) S: 14 kts Dim: 15.3 × 5.32 × 1.22

A: 2/12.7-mm mg (II × 1) - 1/7.62-mm mg - 1/60-mm mortar

M: 2 G.M. 12V71N diesels; 2 props; 1,050 hp

Range: 200/10 Man: 5 tot.

REMARKS: A minesweeping version of the ASPB class. Some were equipped with a pipe frame projecting ahead of the craft to explode contact mines. Others had four 88.9-mm rocket launch tubes mounted on the twin machine gun turret on the bow. One or two 40-mm grenade launchers could also be carried.

• up to 8 ex-U.S. MSM (minesweeping monitor) river minesweepers

D: 70 tons (fl) S: 8.5 kts Dim: 17.09 × 5.33 × 3.1

A: 2/20-mm AA (I \times 2) -1/12.7-mm mg -2/40-mm grenade launchers

M: 2 G.M. 64HN9 diesels; 2 props; 450 hp Man: 5 tot.

REMARKS: Converted LCM(6)-class landing craft, transferred in 1970. Not all had the 20-mm AA. Bar armor fitted to sides. Retained bow ramp. Could sweep mechanical and acoustic mines.

AMPHIBIOUS WARFARE SHIPS

♦ 3 ex-Soviet Polnocny-B medium landing ships Bldr: Polnocny SY, Gdansk, Poland

D: 770 tons (fl) S: 18 kts Dim: 72.5 × 8.4 × 1.8

A: 2 or 4/30-mm AA (I or II × 2) - 2/140-mm barrage RL (XVIII × 2)

Electron Equipt: Radar: 1/Spin Trough, 1/Drum Tilt

M: 2 40D diesels; 2 props; 5,000 hp

Remarks: Transferred: 1 in 5-79, 1 in 11-79, and 1 in 2-80.

♦ 3 ex-U.S. LST 1- and LST 542-class tank landing ships

| | Bldr | Laid down | L | In serv. |
|-------------------------------|----------------|-----------|----------|----------|
| ex-HQ 501 ex-Da Nang | Bethlehem, | 12-7-44 | 15-8-44 | 9-9-44 |
| (ex-Maricopa County, LST 938) | Hingham, Mass. | | | |
| ex-HQ 503 ex-Vung Tau | Chicago B & I, | 10-12-43 | 15-4-44 | 15-5-44 |
| (ex-Coconino County, LST 603) | Seneca, Ill. | | | |
| ex-HQ 504 ex-Qui Nhon | Jeffersonville | 7-10-43 | 23-11-43 | 8-1-44 |
| (ex-Bullock County, LST 509) | B & M, Ind. | | | |
| | | | | |

D: 1,623 tons light (4,080 fl) S: 11.6 kts Dim: 99.98 × 15.24 × 4.29

Electron Equipt: Radar: 1/SPS-53

M: 2 G.M. 12-567A (ex-HQ 501: G.M. 12-278A) diesels; 2 props; 1,700 hp

Electric: 300 kw Fuel: 590 tons Range: 6,000/9 (loaded)

Man: Approx. 100 tot.

Remarks: Transferred to South Vietnam 7-62, 7-69, and 4-70, respectively. All believed to be operational; probably rearmed with Soviet-supplied weapons. Several of the ex-U.S. LSTs may have been transferred to Vietnam by China, at least one configured as a fuel tanker.

♦ 4 ex-U.S. LSM 1-class medium landing ships

| | Bldr | Laid down | L | In serv. |
|-------------------------------|--------------|-----------|----------|----------|
| ex-HQ 401 ex-Han Giang | Brown SB, | 7-10-44 | 28-10-44 | 25-11-44 |
| (ex-Fr. LSM 9012, ex-LSM 110) | Houston | | | |
| ex-HQ 403 ex-Ninh Giang | Brown SB, | 22-8-44 | 15-9-44 | 12-10-44 |
| (ex-LSM 85) | Houston | | | |
| ex-HQ 405 ex-Tien Giang | Pullman Car, | 16-3-44 | 24-5-44 | 25-6-44 |
| (ex-LSM 313) | Chicago | | | |
| ex-HQ 406 ex-Hau Giang | Federal SB, | 11-8-44 | 20-9-44 | 16-10-44 |
| (ex-LSM 276) | Newark, N.J. | | | |

D: 520 tons light (1,095 fl) S: 12.5 kts Dim: 62.03 × 10.52 × 2.54

A: 2/40-mm ÅA (II × 1) -4 or 5/20-mm AA (I × 4 or 5) -4/12.7-mm mg (I × 4)

M: 2 Fairbanks-Morse 38D81/4 diesels (ex-HQ 406: G.M. 278A); 2 props; 2,880 hp

Fuel: 160 tons Range: 4,900/12

Man: Approx. 70 tot.

Remarks: Transferred to South Vietnam 10-55 (after service in French Navy), 10-56, 6-62, and 3-63, respectively. Ex-HQ 401 had been converted for hospital ship duties.



Ex-HQ 401 as a hospital ship

U.S. Navy, 1967

• up to 14 ex-U.S. LCU 1466-class utility landing craft

| ex-LCU 1475 | ex-LCU 1485 | ex-LCU 1502 |
|-------------|-------------|-------------------------|
| ex-LCU 1479 | ex-LCU 1493 | ex-LCU 1594 |
| ex-LCU 1480 | ex-LCU 1494 | ex-LCU 1595 |
| ex-LCU 1481 | ex-LCU 1498 | ex-YFU 90 (ex-LCU 1582) |
| ex-LCU 1484 | ex-LCU 1501 | |

D: 367 tons (fl) S: 8 kts Dim: 35.14 × 10.36 × 1.5

A: 4/20-mm AA (II × 2) M: 3 Gray Marine 64YTL diesels; 3 props; 675 hp

Fuel: 11 tons Range: 1,200/6 Man: 14 tot.

Remarks: Transferred 1954-70 (ex-YFU 90 in 7-71). Cargo: 167 tons.

◆ 1 ex-U.S. LCU 501 (LCT(6))-class utility landing craft Bldr: Bison SB, Buffalo, N.Y.

ex-LCU 1221 (L: 27-8-44)

D: 143 tons light (309 fl) S: 8 kts Dim: 36.42 × 9.75 × 1.3

A: 4/20-mm AA (II × 2) M: 3 Gray Marine 64HN9 diesels; 3 props; 675 hp

Fuel: 11 tons Range: 1,200/7 Man: 13 tot.

Remarks: Transferred to South Vietnam 11-55. Cargo: 150 tons. Three half-sisters converted as salvage lift craft were also left behind in 1975; ex-YLLC 1 (ex-LCU 1348), ex-YLLC 3 (ex-YFU 33, ex-LCU 1195), and ex-YLLC 5 (ex-YFU 2, ex-LCU

Note: Eighty-four U.S. LCM(6), 38 LCM(8), 40 LCVP, and several LCP-type landing craft were also abandoned; many have probably been returned to service.

◆ 12 or more ex-Soviet T4-class landing craft

D: 35 tons (93 fl) S: 10 kts Dim: 19.9 × 5.6 × 1.4 M: 2 3D6 diesels; 2 props; 600 hp Range: 6,500/10

Remarks: Transferred 1979 and later.

AUXILIARIES AND SERVICE CRAFT

◆ 1 ex-Soviet Kamenka-class hydrographic survey ship/buoy tender

Bldr: Polnocny SY, Gdansk, Poland

D: 703 tons (fl) **S**: 13.7 kts **Dim**: $53.5 \times 9.1 \times 2.6$

Electron Equipt: Radar: 1/Don-2

M: 2 diesels; 2 CP props; 1,765 hp Range: 4,000/10

Remarks: Transferred 12-79. One 5-ton buoy crane.

3 ex-U.S. 174-foot-class gasoline tankers

Bldr: George Lawley & Sons, Neponset, Mass. (ex-YOG 56: R.T.C. SB, Camden, N.J.)

| | Laid down | L | In serv. |
|-----------------------|-----------|---------|----------|
| ex-HQ 472 (ex-YOG 67) | 26-1-45 | 17-3-45 | 4-5-45 |
| ex-HQ 473 (ex-YOG 71) | 11-6-45 | 24-7-45 | 27-8-45 |
| ex-HQ 475 (ex-YOG 56) | 17-5-44 | 30-9-44 | 19-2-45 |

D: 440 tons light (1,390 fl) **S**: 11 kts **Dim**: 53.04 (51.2 pp) $\times 9.75 \times 3.94$ A: 2/20-mm AA (I \times 2)

M: 1 G.M. diesel (ex-YOG 56: Union diesel); 1 prop; 640 hp (ex-YOG 56: 540 hp) Electric: 80 kw Fuel: 25 tons Cargo: 860 tons Man: 23 tot.

REMARKS: Transferred to South Vietnam in 7-67, 3-70, and 6-72. Employed in transporting diesel fuel.

◆ 1 ex-U.S. 174-foot-class water tanker Bldr: Nav. Mec. Castellamare, Italy (In serv. 1956)

ex-HQ 9118 (ex-YW 152)

D: 1,250 tons (fl) S: 9 kts Dim: 54.4 × 9.8 × 4.3

A: 2/20-mm AA (I \times 2)

M: 1 Ansaldo diesel; 1 prop; 600 hp Man: 23 tot.

REMARKS: Built with U.S. funds for South Vietnam under the Offshore Procurement

 3 ex-U.S. Cholocco-class medium harbor tugs Bldr: Commercial Iron Wks, Portland, Ore.

VIETNAM (continued) AUXILIARIES AND SERVICE CRAFT (continued)

Ex-HQ 9550 (ex-Poknoket, YTM 762, ex-YTB 517)
Ex-HQ 9551 (ex-Hombro, YTM 769, ex-YTB 508)
Ex-HQ 9552 (ex-Nootka, YTM 771, ex-YTB 506)
In serv.
25-1-46
7-7-45
8-11-45

D: 260 tons (350 fl)
 S: 11 kts
 Dim: 30.8 × 8.5 × 3.7
 M: 2 Enterprise diesels; 1 prop; 1,270 hp
 Man: 8 tot.

REMARKS: Reclassified YTM from YTB in 1966; transferred to South Vietnam 1971.

• up to 9 ex-U.S. YTL-type small harbor tugs

 ex-YTL 152
 ex-YTL 245
 ex-YTL 456

 ex-YTL 200
 ex-YTL 423
 ex-YTL 457

 ex-YTL 206
 ex-YTL 452
 ex-YTL 586

D: 70 tons (80 ft) S: 10 kts Dim: 20.16 × 5.18 × 2.44 M: 1 Hoover-Owens-Rentschler diesel; 1 prop; 300 hp Electric: 40 kw Fuel: 7 tons Man: 4 tot.

Remarks: Built 1941-45. Four transferred to South Vietnam in 1955-56, two in 1969, and two in 1971.

♦ 2 ex-U.S. Navy repair barges (non-self-propelled)

Ex-HQ 9601 (ex-YR 24) Ex-HQ 9611 (ex-YR 71)

D: 520 tons light (770 fl) Dim: 46.6 × 10.7 × 1.8

♦ 4 ex-U.S. Navy repair, berthing, and messing barge (non-self-propelled)

Ex-HQ 9610 (ex-YRBM 17) Ex-HQ 9613 (ex-YRBM 21) Ex-HQ 9612 (ex-YRBM 16) Ex-HQ-. . . (ex-YRBM 18)

D: 236 tons (310 fl) Dim: 34.1 × 11.0 × 0.9

Remarks: Completed 1964-65. Ex-HQ 9613 is 498 tons (585 fl); $44.5 \times 14.0 \times 0.9$ and was completed in 1970.

♦ 2 ex-U.S. Navy barracks craft (non-self-propelled)

Ex-HQ 9050 (ex-APL 26) Ex-HQ 9051 (ex-APL 27)

D: 1,300 tons (2,580 fl) Dim: 79.6 × 15.0 × 2.6

Remarks: Completed 1944-45.

♦ 1 ex-U.S. Navy refrigerated lighter Bldr: Defoe SB, Bay City, Mich.

Ex-HQ 490 (ex-YFR 889) (In serv. 1945)

D: 300 tons (660 fl) S: 10 kts Dim: 40.5 × 9.1 × 2.7

M: 2 G.M. diesels; 1 prop; 1,000 hp Fuel: 30 tons Cargo: 300 tons

Remarks: Coastal cargo ship, transferred 1971.

♦ 2 ex-U.S. Navy large covered lighters

Ex-YFNB 18 Ex-YFNB 28

D: 700 tons (2,700 fl) Dim: 79.6 × 14.6 × 4.0

Remarks: Ex-HQ numbers not available. Transferred 1971. Cargo: 2,000 tons.

♦ 8 ex-U.S. Navy open lighters

Ex-YC 791, 797, 806, 807, 1108, 1320, 1414, 1415

Remarks: Ex YC 791, 1108, and 1320 displace 190 tons light/690 fl, others are 130 tons light/630 fl $(33.5 \times 9.8 \times 2.4)$. Transferred around 1971.

♦ 2 ex-U.S. Navy floating cranes

ex-HQ 9650 (ex-YD 230) Ex-HQ 9651 (ex-YD 195)

♦ 2 ex-U.S. floating drydocks (In serv. 1944)

Ex-HQ 9600 (ex-AFDL 13) Ex-HQ 9604 (ex-AFDL 22)

REMARKS: Ex-HQ 9600 has a capacity of 1,000 tons and is 61.0 × 19.5. Ex-HQ 6904 has a capacity of 1,900 tons and is 87.8 × 19.5. Both were left behind in 1975.

◆ 1 ex-U.S. water barge (non-self-propelled)

ex-HQ 9113 (ex-YWN 153)

D: 220 tons (1,270 fl) Dim: 36.6 × 10.1 × 2.4 Cargo: 1,050 tons

Note: In addition to the ships and craft listed above, the Vietnamese Navy undoubtedly employs many smaller craft ("junks") in patrol and logistics duties. Cargo ships of up to several hundred deadweight tons capacity were built in North Vietnamese ship-yards during the Vietnamese War for infiltration purposes; many of these armed craft may still be in military service.

VIRGIN ISLANDS

British Virgin Islands

ROYAL VIRGIN ISLANDS POLICE FORCE

♦ 1 patrol craft Bldr: Brooke Mar

Bldr: Brooke Marine, Lowestoft, U.K. (In serv. 1975)

VIRGIN CLIPPER

D: 15 tons (fl) S: 22 kts Dim: 12.2 × 3.7 × 0.6 A: 1/7.62-mm mg Electron Equipt: Radar: 1/Decca 101 M: 2 Caterpillar diesels; 2 props; 370 hp Man: 4 tot.

♦ 2 Sea Eagle-class launches Bldr: Coloso Boat Co. (In serv. 1980)

D: . . . S: . . . Dim: 7.0 × . . . × . . . M: 2 Evinrude outboard engines; 110 hp

WESTERN SAMOA

PATROL BOAT

♦ 0 (+1) Australian ASI 315 class Coogie, Western Australia (In serv. 1987)

D: 165 tons (fl) **S**: 20 kts **Dim**: 31.5 (28.6 wl) \times 8.1 \times 2.12

A: . . . Electron Equipt: Radar: 1/Furuno 1011

M: 2 Caterpillar 3516 diesels; 2 props; . . . hp Electric: . . . Fuel: 33 tons Range: 2,500/12 Man: 3 officers, 14 men

Remarks: Provided by Australian foreign aid. Sisters being built for other Southwest Pacific nations. See illustration under Papua New Guinea.

YEMEN

People's Democratic Republic of Yemen (South Yemen)

Personnel (1985): About 1,000 total

Merchant Marine (1984): 28 ships - 12,495 grt (1 tanker - 1,886 grt)

Note: A number of naval units were lost during the 1-86 coup.

CORVETTE

• 1 ex-Soviet T-58 class

D: 750 tons (860 fl) S: 18 kts Dim: 70.0 × 9.1 × 2.5

A: 4/57-mm AA (II × 2) -2/RBU-1200 ASW RL (V × 2) -2/d.c. racks - mines

Electron Equipt: Radar: 1/Don-2, 1/Muff Cob

Sonar: 1/high frequency

M: 2 diesels; 2 props; 4,000 hp Range: 2,500/13.5 Man: Approx. 60 tot.

Remarks: Former minesweeper. Built in the late 1950s, transferred 1978. Minesweeping equipment entirely deleted. Believed probably inoperable by 1984.

GUIDED-MISSILE PATROL BOATS

♦ 8 ex-Soviet OSA-II class

D: 210 tons (240 ft) S: 35 kts Dim: 38.6 × 7.6 × 2.0 A: 4/SS-N-2B Styx SSM (I × 4) — 4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt M: 3 M504 diesels; 3 props; 15,000 hp

Range: 500/34; 750/25 Man: 30 tot.

REMARKS: Transferred: 2 in 2-79 to 4-79, 3 in 1-80, 1 in 12-80, 1 in 2-83, 1 in 9-83.

TORPEDO BOATS

♦ 2 Soviet MOL class

D: 170 tons (210 fl) S: 40 kts Dim: 38.6 × 7.6 × 1.8

A: 4/30-mm AA (II × 2)-4/533-mm TT

Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt

M: 3 M503 diesels; 3 props; 12,000 hp Range: 450/34; 700/20 Man: 30 tot.

Remarks: Transferred 1978. Design based on Osa-class guided-missile patrol boat. Sisters in Somali Navy.

YEMEN (SOUTH) (continued) PATROL BOATS

♦ 2 ex-Soviet Zhuk class

D: 44 tons (60 fl) S: 34 kts Dim: 24.0 × 5.0 × 1.2

A: 2/14.5-mm mg (II × 1) Electron Equipt: Radar: 1/Spin Trough

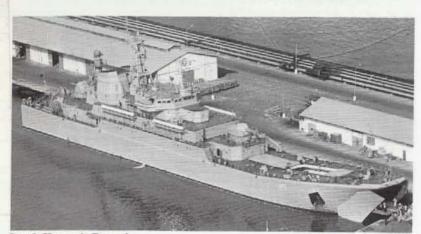
M: 2 M50 diesels; 2 props; 2,400 hp Range: 700/28; 1,100/15 Man: 12 tot.

REMARKS: Transferred in 2-75

AMPHIBIOUS WARFARE SHIPS

1 ex-Soviet Ropucha class

Bldr: Polnocny SY, Gdansk, Poland



South Yemen's Ropucha

D: 2,200 tons (3,200 fl) S: 18 kts Dim: 113.0 × 14.0 × 2.9 (aft)

A: 4.57-mm AA (II × 2)

Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Muff Cob

IFF: 1/High Pole B

M: 2 diesels; 2 props; 10,000 hp Range: 3,500/16 Man: 70 crew + 230 troops

Remarks: Transferred 1980. By far the largest unit in South Yemen's service.

4 ex-Soviet Polnocny-B-class medium landing ships

Bldr: Polnocny SY, Gdansk, Poland

D: 800 tons (fl) S: 19 kts Dim: 74.0 × 8.6 × 2.0

A: 2 or 4/30-mm AA (II × 1) - 2/140-mm barraga RL (XVIII × 2) - 4/SA-N-5

Electron Equipt: Radar: 1/Spin Trough, 1/Drum Tilt IFF: 1/Square Head, 1/High Pole B

M: 2 diesels; 2 props; 4,000 hp

Range: 900/18; 1,500/14 Man: 40 crew + 100 troops

REMARKS: Two delivered 8-73, one in 7-77 and one in 1979.

• 5 ex-Soviet T-4-class landing craft

D: 35 tons light (93 fl) S: 10 kts Dim: 19.9 × 5.6 × 1.4

M: 2 Type 3D6 diesels; 2 props; 600 hp Range: 1,500/10

Remarks: Transferred: 3 in 11-70, 2 in 1982. Resemble U.S. LCM(6) class.

MINISTRY OF THE INTERIOR

• 5 Tracker-2 class Bldr: Fairey Marine, U.K.

D: 31 tons (fl) S: 29 kts Dim: 19.25 × 4.98 × 1.45

A: 1/20-mm AA M: 2 MTU 8V331 TC diesels; 2 props; 2,200 hp

Range: 650/25 Man: 11 tot.

Remarks: Ordered 8-77; delivered 1977-78. Used in customs duties.

• 4 Spear class Bldr: Fairey Marine, U.K.

D: 4.5 tons (fl) S: 26 kts Dim: 9.1 × 2.8 × 0.8 A: 3/7.62-mm mg M: 2 diesels; 2 props; 290 hp

Remarks: Three delivered 20-9-75; fourth during 1978. Used in customs duties. Glassreinforced plastic construction.

 1 Interceptor class Bldr: Fairey Marine, U.K.

REMARKS: Catamaran with two 135-hp outboard motors, can carry eight 25-man life rafts, and intended for rescue duties. Overall: 7.6 meters.

YEMEN ARAB REPUBLIC (North Yemen)

Personnel (1985): Approximately 200 men, plus 250 naval port police

Merchant Marine (1984): 10 ships - 3,203 grt

GUIDED-MISSILE PATROL BOATS

♦ 2 ex-Soviet OSA-II class

D: 210 tons (240 fl) S: 35 kts Dim: 38.6 × 7.6 × 2.0 A: 4/SS-N-2B Styx SSM (I × 4) -4/30-mm AA (II × 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt

M: 3 M504 diesels; 3 props; 15,000 hp Range: 500/34; 750/25 Man: 30 tot.

Remarks: Delivered 20-5-82.

PATROL BOATS

200 SANA'A

Bldr: Halter Marine, New Orleans, La. (In serv. 1978) 3 Broadsword class 300 13TH JUNE 400 25TH SEPTEMBER



13th June

1981

D: 90 tons (fl) S: 28 kts Dim: 32.0 × 6.3 × 1.9

A: 2/23-mm AA (II × 1) -2/14.5-mm mg (II × 1) -2/12.7-mm mg (I × 2)

Electron Equipt: Radar: 1/Decca 914

M: 3 G.M. 16V71 TI diesels; 3 props; 1,400 hp Electric: 120 kw

Fuel: 16.3 tons Man: 14 tot.

Remarks: Ordered 1977. Armament, added after delivery, is of Soviet origin.

4 Soviet Zhuk class

D: 48 tons (60 fl) S: 34 kts Dim: 24.6 × 5.2 × 1.2

A: 4/14.5-mm mg (II × 2) Electron Equipt: Radar: 1/Spin Trough

M: 2/M50F diesels; 2 props; 2,400 hp Range: 700/28; 1,100/15 Man: 12 tot.

Remarks: Two transferred 1978, two in 1980. Unlike other units of this class, the North Yemeni units have their twin machine guns in enclosed gun houses with hemispherical covers.

MINE COUNTERMEASURES CRAFT

2 Soviet Yevgenya class

D: 80 tons (90 fl) S: 11 kts Dim: 26.2 × 6.1 × 1.5

A: 2/14.5 or 25-mm AA (II × 1) Electron Equipt: Radar: 1/Spin Trough

M: 2 diesels; 2 props; 600 hp Range: 300/10 Man: 10 tot.

Remarks: Delivered 5-82. Glass-reinforced plastic construction. Export Yevgenyas normally have a twin 25-mm AA mount; uncertain in this instance.

AMPHIBIOUS WARFARE

2 Soviet Ondatra-class landing craft

D: 90 tons (140 fl) S: 10 kts Dim: 24.2 × 6.0 × 1.5 A: None M: 2 diesels; 2 props; 600 hp Man: 4 tot.

Remarks: Transferred 1-83. Cargo well 15.0 × 3.8 m; bow ramp. Replaced two T-4class landing craft transferred around 1970.

Personnel (1985): 1,500 officers, 11,600 men (2,300 in Coast Defense Force)

Merchant Marine (1984): 480 ships - 2,681,879 grt (tankers: 23 ships - 230,880 grt)

NAVAL AVIATION: One squadron of 8 Soviet Ka-25 Hormone ASW helicopters, two Canadian DHC-2 Beaver STOL light transports, four Canadian CL 215 amphibians, and several license-built French SA 341H Gazelle (Partizan) helicopters may enter naval service.

The Air Force has a "Naval Cooperation Regiment," equipped with 50 RT-33 reconnaissance, MiG-21 fighter, and Jastreb attack aircraft.

SUBMARINES (P = Podnornica)

 2 Sava-class submarines Bldr: Split SY

| | Laid down | L | In serv |
|-------------|-----------|------|---------|
| P 831 Sava | 1975 | 1977 | 1978 |
| P 832 Drava | 1977 | 1982 | 1982 |



Drava

Front, 1-83

D: 770/964 tons **S**: 16 kts (sub.) **Dim**: 55.8 × 5.05 × . .

A: 6/533-mm TT-10 torpedoes or 20 mines Endurance: 28 days

M: Diesel-electric; 1 prop; 2,400 hp Man: 35 tot.

Remarks: Maximum diving depth: 300 meters. Resemble the Heroj class, but are smaller.

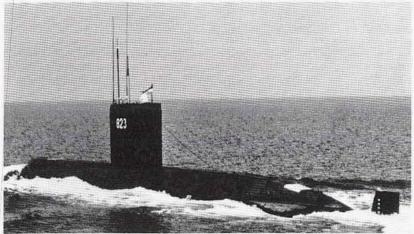
♦ 2 Heroj class Bldr: Uljanik SY, Pula

| | Laid down | L | In serv. |
|-------------|-----------|------|----------|
| P 822 Junak | 1966 | 1968 | 1969 |
| P 823 Uskok | 1968 | 1-70 | 1970 |



Junak (P 822)

French Navy, 1982



Uskok (P 823)

1984

 D: 1,068/1,170/1,350 tons
 S: 16/10 kts
 Dim: 64.0 × 7.2 × 5.0
 A: 6/533-mm TT (fwd)
 M: 2 diesels, electric motors; 1 prop; 2,400 hp Range: 9,700/8 Man: 36 tot.

Remarks: Sister Heroj (821) stricken 1982 after an accident.

Bldr: Uljanik SY, Pula 2 Sutjeska class

| TENCHINA DE CARACTERIA | Laid down | L | In serv. |
|------------------------|-----------|---------|----------|
| P 811 SUTJESKA | 1957 | 28-9-58 | 9-60 |
| P 812 NERETVA | 1957 | 1959 | 1962 |



Neretva (P 812) - now has bulbous bow

G. Arra, 1969

D: 700/820/945 tons **S:** 14/9 kts **Dim:** $60.0 \times 4.8 \times 4.8$ **A:** 6/533-mm TT (4 fwd, 2 aft; 8 torpedoes)

M: 2 Sulzer diesels, electric motors; 1,800 hp

Range: 4,400/8.6 Man: 38 tot.

Remarks: First submarines built in Yugoslavia. New bow sonar arrays added during the early 1970s.

MIDGET SUBMARINES

♦ 2 Type M100 or Una class Bldr: . . .

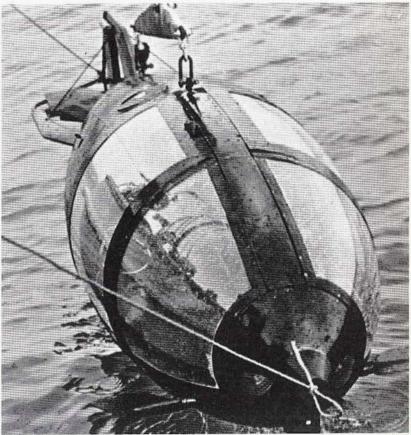
D: 90 tons surfaced/100 sub. **S:** 8.5/11.0 kts **Dim:** $18.0 \times 3.7 \times 2.50$

A: 6 mines or 6 swimmer delivery vehicles, Type R1

M: Diesel-electric propulsion

Remarks: First unit completed 5-5-85. The second may be destined for Libya. Surfaced displacement also given as 76 tons. Type R1 swimmer delivery chariots weigh 145 kg, are 3.7-m long by 0.52 beam, and have a range of 8 n.m. at 3 kts.

♦ 2 or more Type R2, Mala-class swimmer delivery vehicles



Mala (R 2) class

1984

D: 1.4 tons **S:** 4.4 kts **Dim:** $4.90 \times 1.22 \times 1.32$ (1.70 fins)

A: 2/50-kg mines Range: 23/3.7

M: 1 electric motor; 1 prop; 6 hp Man: 2 tot.

REMARKS: Diving depth: 60 m.

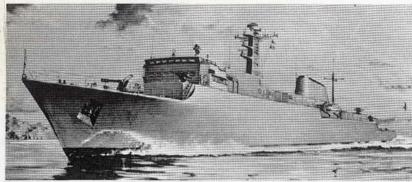
FRIGATES (VPB-Velici Patrolni Brod-Large Patrol Ship)

♦ 0 (+2) new construction

Bldr: Tito SY, Kraljevica

VPB 33 Kotor VPB 34 N. . . . Laid down 1981

In serv. 29-5-84 1986



Kotor (VPB 33) - artist's concept

1984

D: 1,850 tons (fl) S: 27 kts Dim: 96.7 (92.0 wl) × 11.2 × 3.55 (5.80 over sonar)

Electron Equipt: Radar: . . . — Sonar: .

M: CODAG: 2 SEMT-Pielstick 12 PA6V280 diesels (4,800 hp each), 1 Soviet gas turbine (15,000 hp); 3 props (CP outboard); 24,600 hp

Electric: 1,350 kw Man: Approx. 90 tot.

Remarks: These ships will apparently be a modification of the design for two similar training frigates recently built for Indonesia and Iraq and may have similar armament (4 anti-ship missiles, 1/57-mm Bofors DP, several 40-mm AA, etc.). The main propulsion diesels were ordered in 6-80 (two to be built under license in Yugoslavia), and the first was delivered 31-3-81; the propulsion concept duplicates the arrangement in the Koni class.

• 2 Soviet Koni class Bldr: Zelenodolsk SY

VPB 32 KOPER (In serv. 19-2-83) VPB 31 Split (In serv. 4-80)

D: 1.900 tons (fl) S: 30 kts Dim: 95.0 × 12.8 × 4.2 (5.4 over sonar)

A: 4/SS-N-2C Styx SSM (I × 4) - 1/SA-N-4 SAM syst. (II × 1, 20 Gecko missiles) - 4/76.2-mm DP (II × 2) - 4/30-mm AA (II × 2) - 2/RBU-6000 ASW RL (XII \times 2) -2/d.c. racks (12 d.c.) - mines

Electron Equipt: Radar: 1/Don-2, 1/Strut Curve, 1/Prop Group, 1/Hawk Screech, 1/Drum Tilt

Sonar: 1/med. freq., hull-mounted



Split (VPB 31) - with Styx missiles

1983

M: CODAG: 115,00-hp gas turbine, 2 diesels; 3 props; 30,000 hp Range: 1,800/14 Man: 110 tot.

REMARKS: New-construction units. Sisters in the Algerian, East German, Cuban, and Soviet navies. Koper received Styx missiles during 1984-85; they were added to Split during 1982. Koper arrived in Yugoslavia on 5-12-83.

CORVETTES (PBR = Patrolni Brod)

♦ 2 Mornar class Bldr: Tito SY, Kraljevica

Laid down L In serv. PBR 551 MORNAR 1957 1958 10-9-59 PBR 552 Borac 1964 1965 1965



Borac (PBR 552)

1973

D: 330 tons (430 fl) **S:** 24 kts **Dim:** $51.8 \times 6.97 \times 3.1$ (2.0 hull) A: 2/40-mm AA $(I \times 2) - 2/20$ -mm AA $(I \times 2) - 4/RBU$ -1200 ASW RL

 $(V \times 4) - 2/Mk$ 6 d.c. projectors -2/Mk 9 d.c. racks Electron Equipt: Radar: 1/Decca 45 - Sonar: 1/Tamir-11 M: 3 Werkspoor diesels; 3 props; 7,500 hp Fuel: 55 tons

Range: 660/24; 3,000/12 Man: 60 tot.

Remarks: Modernized 1970-73 at Sava Kovacevic Naval Yard, Tivat. Original two 76.2-mm DP guns, two older-model 40-mm AA, and Mousetrap ASW rocket launchers replaced by new Bofors guns and Soviet ASW rocket launchers.

♦ 1 French Le Fougueux class

Bldr: F.C. Méditerranée, Le Havre

PBR 581 Udarnik (ex-P 6, ex-PC 1615)

Laid down

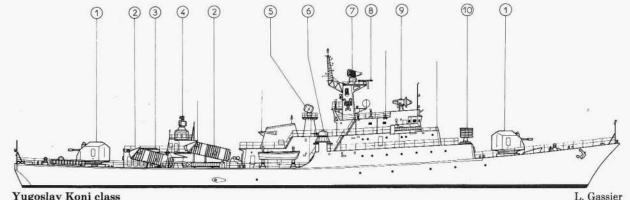
Τ. In serv. 1-56

1954 21-12-54



Udarnik (PBR 581)

H. Ehlers, 4-84



Yugoslav Koni class 1. twin 76.2-mm DP 2. launchers for SS-N-2C 3. launcher/magazine for SA-N-4 SAM system 4. Pop Group radar director for SA-N-4 5. Drum Tilt radar director for 30-mm AA 6. twin 30-mm AA 7. Strut Curve air/surface-search radar 8. Don-2 navigational/surface-search radar 9. Hawk Screech radar director for the 76.2-mm guns 10. RBU-6000 ASW RL (XII × 2)

CORVETTES (continued)

D: 329 tons (409 ft) S: 18.7 kts Dim: 53.10 (50.9 wl) \times 7.3 \times 3.0 (2.1 hull) A: 1/40-mm AA - 2/20-mm AA (I \times 2) - 1/RBU 1200 ASW RL (V \times 1) - 2/d.c. racks

Electron Equipt: Radar: 1/DRBN-30-Sonar: 1/DUBA-2

M: 4 SEMT-Pielstick PA17V diesels; 2 props; 3,240 hp Electric: 120 kw Fuel: 45 tons Range: 3,300/15; 6,350/12 Man: 62 tot.

Remarks: Built with U.S. Offshore Procurement Funds as U.S. PC 1615; transferred on completion. One sister in the Tunisian Navy. Engines can produce 3,840 hp for brief periods. Armament revised by 4-84

GUIDED-MISSILE PATROL BOATS (RT = Raketni Topovnjača)

♦ 1 (+9?) Type 400, Kobra class Bldr: Tito SY, Kraljevica

D: 385 tons (525 fl)
 S: 34 kts
 Dim: 54.80 (51.88 pp) × 8.96 (8.16 wl) × 2.46
 A: 4/SS-N-2C Styx SSM-1/76-mm OTO Melara DP-2/40-mm Breda Dardo AA (II × 1) - 8/20-mm AA (IV × 2)

M: 4 MTU 20V538 TB92 diesels; 4 props; 14,000 hp Range: . . . Endurance: 15 days Man: . . .

Remarks: A missile "corvette" class intended to begin replacement of the elderly OSA-I class. Also reported as being built for Libya. Chaff rocket launchers will be mounted on the sides of the 76-mm mount. First unit may have been completed 1985.

| • 6 Rade Končar class | Bldr: Tito SY, Kraljevica |
|-----------------------|---------------------------|
|-----------------------|---------------------------|

| | L | In serv. |
|-----------------------------|----------|----------|
| RT 401 RADE KONČAR | 15-10-76 | 4-77 |
| RT 402 Vlado Četkovič | 28-8-77 | 1977 |
| RT 403 RAMIZ SADIKU | 1978 | 10-9-78 |
| RT 404 HASAN ZAHIROVIČ LASA | 1979 | 11-79 |
| RT 405 JORDAN NIKOLOV-ORCE | 1979 | 1979 |
| RT 406 Ante Banina | 1979 | 12-79 |



Rade Končar (RT 401)

1977



Rade Končar (RT 401)

1977

D: 242 tons (. . . fl) **S:** 39 kts (27 sust.) **Dim:** $45.0 \times 8.0 \times 1.8$ (2.5 props)

A: 2/SS-N-2B Styx SSM-2/57-mm Bofors DP (I \times 2) Electron Equipt: 1/Decca 1226-1/9LV200 system

M: CODAG: 2 Rolls-Royce Proteus gas turbines, 4,500 hp each; 2 MTU 20V538 TB 92 diesels, 3,600 hp each; 4 CP props; 16,200 hp

Range: 880/23; 1,650/15 Man: 5 officers, 10 petty officers, 15 men Electric: 300 kVA

Remarks: Of Yugoslav design, using Swedish (Svensk Phillips) fire control and guns and Soviet missiles; RT 401 has 9LV200 Mk I, later ships have 9LV200 Mk II. Have a Soviet Square Head IFF interrogator. Styx missiles chosen over the Exocet originally planned, probably for economic reasons. Steel hull, aluminum superstructure. Have NBC warfare protection. Endurance: 7 days

♦ 10 ex-Soviet OSA-I class (RC = Raketni Čamac)

RC 301 MITAR ACEV RC 302 VLADO BAGAT RC 303 PETAR DRAPŠIN RC 304 STEVEN FILIPOVIČ

RC 305 Velimir Škorpik

RC 307 Josip Mazar RC 308 Karlo Rojc RC 309 Franc Rozman-Stane RC 310 Zikaca Jovanovič-Španac

RC 306 NIKOLA MARTINOVIČ



Mitar Acev (RC 301)

D: 185 tons (215 ff) S: 35 kts Dim: $38.6 \times 7.6 \times 1.8$ A: 4/SS-N-2 Styx SSM — 4/30-mm AA (II \times 2) Electron Equipt: Radar: 1/Square Tie, 1/Drum Tilt IFF: 1/High Pole B, 2/Square Head

M: 3 M503A diesels; 3 props; 12,000 hp Range: 500/34; 750/25 Man: 25 tot.

Remarks: Transferred 1965-69. Reported to be showing their age.

TORPEDO BOATS (TČ = Torpedni Čamac)

14 Soviet Shershen class serv. 1966-71)

Bldrs: 4 in USSR; others: Tito SY, Kraljevica (In

 TČ 211 TOPČIDER
 TČ 216 JADRAN
 TČ 221 BIOKOVAK

 TČ 212 N.
 TČ 217 KORNAT
 TČ 222 PARTIZAN-II

 TČ 213 PROLETER
 TČ 218 N.
 TČ 223 N.
 TČ 224 N.

 TČ 214 PIONIR
 TČ 219 N.
 TČ 224 N.
 TČ 224 N.

 TČ 215 IVAN
 TČ 220 CRVENA ZVIJEZDA



Biokovak (TC 221)

1980

D: 150 tons (180 fl) S: 45 kts Dim: 34.0 × 7.2 × 1.5 A: 4/30-mm AA (II × 2) — 4/533-mm TT — mines Electron Equipt: Radar: 1/Pot Drum, 1/Drum Tilt Sonar: 1/High Pole B, 1/Square Head

M: 3 M503A diesels; 3 props; 12,000 hp Range: 450/34; 700/20 Man: 22 tot.

Remarks: Ten built in Yugoslavia under license, after four were transferred in 1965.
Unlike Soviet units, have no depth-charge racks. Other known names: Partizan,
Pionir II, Strjelco, Sloga, Napredak.

PATROL BOATS (PČ = Patrolni Čamac)

. . . Type 80 class Bldr: . . .



Type 80 class (without 20-mm AA)

1984

PATROL BOATS (continued)

D: 80 tons S: 32 kts (26 sust.) Dim: 27.35 × 6.55 × 1.15 (2.20 props)

A: 1/40-mm AA -4/20-mm AA (IV \times 1)

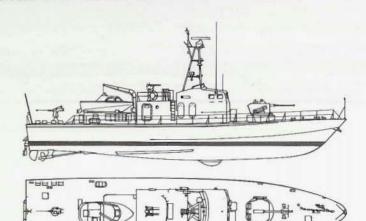
Electron Equipt: Radar: 1/. . . nav. Man: 17 tot.

M: 3 diesels; 3 props; 4,350 hp Range: 400/25 Endurance: 5 days

Remarks: Reduced edition of Mirna design; offered for foreign sale. Has four illumination/chaff RL on foredeck.

♦ 10 Type 240 Mirna class (In serv. 1981-82)

PČ 179 N. PČ 174 Učka PČ 177 N. РС 171 Вюкочо PČ 172 POHORSE PČ 173 KOPRIVNIK PČ 180 N. PČ 175 BRMEC PČ 178 KOSMAJ PČ 176 Mukos



Mirna-class patrol boat

D: 120 tons (. . . fl) S: 30 kts Dim: 32.00 × 6.68 × 1.60 (2.30 max.)

A: 1/40-mm Bofors L70 AA—1/20-mm AA—8/Type MDB-MT3 d.c. Electron Equipt: Radar: 1/. . . nav.—Sonar: high freq. set

M: 2 SEMT-Pielstick 12 PA4 200GDS diesels; 2 props; 6,000 hp — electric motors for low speeds (6 kts)

Electric: . . . Range: 400/20 Man: 3 officers, 4 petty officers, 12 men

Remarks: The first 10 propulsion diesels were ordered in 1979, for license production in Yugoslavia. Endurance at 20 kts can be increased to 530 n.m. in emergencies. Peacetime endurance is four days, wartime: 8 days. Have 4-rail chaff launcher amidships. There are 4 chaff or illumination rocket rails on the sides of the 40-mm AA.

♦ 7 Type 131 coastal patrol craft

Bldr: Trogir SY (In serv. 1965-68)

PČ 132 KALNIK PČ 135 GRUDNIK

PČ 136 ROMANIJA

PČ 137 KAMENAR PČ 140 Kožuf

PČ 133 VELEBIT PČ 134 GRANDIČAR



Grudnik (PC 135)

D: 85 tons (120 fl) S: 22 kts Dim: 32.0 × 5.5 × 2.5 A: 6/20-mm Hispano Suiza HS831 AA (III × 2) Electron Equipt: Radar: 1/Kelvin-Hughes 14/9

M: 2 MTU MB820 Db diesels; 2 props; 1,600 hp

REMARKS: May serve in the Maritime Border Brigade, an organization similar to a coast guard. Sisters Cer (PČ 138) and Durmitor transferred to Malta 31-3-82. Several others have been scrapped: Type 80 class appears intended as their replacements.

PATROL CRAFT

. . . Type 20 coastal and riverine

D: 55 tons S: 16 kts Dim: 21.78 (20.06 wl) × 5.29 × 1.20

A: 2/20-mm AA (I × 2) - mines Electron Equipt: Radar: 1/Decca 110

M: 2 diesels; 2 props; 1,156 hp Range: 200/15 Man: 10 tot.

Remarks: Hull numbers in the 200-series.

. . . Type 18 coastal and riverine



Type 18 patrol craft

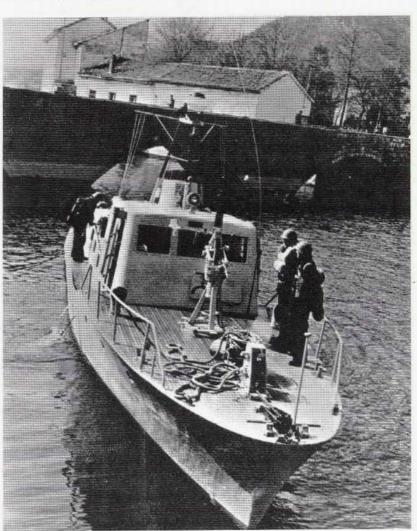
D: 29 tons (fl) S: 20 kts Dim: $18.70 \times 3.60 \times 0.90$ mean A: 2/20-mm AA (I \times 2) — 9/7.62-mm light mg (I \times 9)

Electron Equipt: Radar: 1/Decca 110 M: 2 diesels; 2 props; 752 hp Range: 480/17

Man: 9 crew + 40 troops

Remarks: Intended for patrol, troop transport, and logistic support duties, with up to 4 tons of cargo

. . . Type 16 coastal and riverine



Type 16 patrol craft

D: 23 tons (fl) S: 15 kts Dim: 17.00 × 3.60 × 0.85 mean A: 1/20-mm AA - 7/7.62-mm light mg (I × 9)

Electron Equipt: Radar: 1/Decca 110

PATROL CRAFT (continued)

M: 2 diesels; 2 props; 464 hp Range: 340/15 Man: 7 crew + 30 troops or frogmen

Remarks: Intended for patrol, troop transport, and logistic support duties, with up to 3 tons of cargo.

♦ 5 or more Type 15-class riverine and lake

PČ 15-1 through PČ 15-5



PČ 15-5 and two sisters

1984

D: 19.5 tons (fl) S: 16 kts Dim: 16.87 × 3.90 × 0.65 (0.70 props)

A: 1/20-mm AA — 2/7.62-mm mg (I \times 2) Electron Equipt: Radar: 1/Decca 110 M: 2 diesels; 2 props; 330 hp Range: 160/12 Man: 6 tot.

MINE WARFARE SHIPS (M = Minolovac)

• 4 French Sirius-class coastal minesweepers

Bldrs: M 161: Mali Losinj SY, Yugoslavia; others: A Normand, Le Havre, France

| | In serv |
|--|---------|
| M 151 Vukov Klanac (ex-Hrabri, ex-MSC 229) | 9-57 |
| M 152 Podgora (ex-Smeli, ex-MSC 230) | 9-57 |
| M 153 BLITVENICA (ex-Slobodni, ex-MSC 231) | 9-57 |
| M 161 Gradac (ex-Snazhi) | 1960 |

D: 400 tons (440 fl) S: 15 kts (sweeping: 11.5)

Dim: $46.4 (42.7 \text{ pp}) \times 8.55 \times 2.5$

A: 2/20-mm AA (II × 2)

Electron Equipt: Radar: 1/DRBN-30 — Sonar: Plessey 193M

M: 2 SEMT-Pielstick 16 PA1-175 diesels; 2 props; 2,000 hp Electric: 375 kw Fuel: 48 tons Range: 3,000/10 Man: 40 tot.

Remarks: First three built with U.S. Offshore Procurement funds. Wooden-planked hulls on metal framing. Equipped with Plessey 193M minehunting sonar, French PAP-104 remote-controlled minehunting/disposal submersibles, and Decca Hifix precision navigation systems, commencing 1981.

♦ 4 British "Ham"-class minesweepers Bldr: Yugoslavia (In serv. 1964-66)

M 141 N. (ex-MSI 98) M 143 Iz (ex-MSI 100) M 142 Brsec (ex-MSI 99) M 144 Olib (ex-MSI 101)

D: 123 tons (164 fl) **S:** 14 kts **Dim:** $32.43 \times 6.45 \times 1.7$

A: 1/40-mm Electron Equipt: Radar: 1/Decca 45

M: 2 Paxman YHAXM diesels; 2 props; 1,100 hp Fuel: 15 tons

Range: 1,500/12; 2,000/9 Man: 22 tot.

Remarks: Built under U.S. Offshore Procurement Program. Composite construction: wooden planking over a metal-framed hull

• 6 117-class inshore minesweepers Bldr: Yugoslavia, 1966-68

ML 117 ML 118 ML 119 ML 121 ML 122 ML 123

D: 120 tons (131 fl) **S:** 12 kts **Dim:** $30.0 \times 5.5 \times 1.5$

A: 1/20-mm AA — 2/12.7-mm mg (I × 2) Electron Equipt: Radar: 1/Decca 45

M: 2 G.M. diesels; 1,000 hp Man: 25 tot.

REMARKS: Also used for coastal patrol

♦ 7 Nestin-class Type 50 river minesweepers Bldr: Brodotehnika, Belgrade (In serv. 1976-80)

| | L | | L |
|----------------|----------|---------------------|------|
| M 331 NESTIN | 20-12-75 | M 335 Vučedol | 1979 |
| М 332 Моталіса | 18-12-76 | M 336 DJERDAP | 1980 |
| M 333 Belegis | 1-77 | M 337 Panonsko More | 1980 |
| M 334 Bosur | 1978 | | |

D: 68 tons (78 fl) S: 12 kts Dim: 27.00 × 6.50 × 1.05 (1.15 max.)

A: 5/20-mm AA (III × 1, I × 2) -24 small mines

Electron Equipt: Radar: 1/Decca 101

M: 2 diesels; 2 props; 520 hp Range: 864/10.8 Man: 17 tot.

Remarks: M 331 launched 20-12-75, M 332 launched 18-12-76, and M 333 launched 1-77. Hull of light metal alloy. Sweep gear includes Type PEAM magnetic and acoustic sweep, Type AEL-1 explosive sweep, and Types MDL-1 and MDL-2 mechanical



sweeps. Two illumination chaff rocket launchers are fitted. Used on the Danube. Three also built for Iraq.

AMPHIBIOUS WARFARE SHIPS

Note: The new Type PO multipurpose transports can also be used as landing ships.

♦ 17 DTM 211-class landing craft Bldr: Yugoslavia (In serv. 1950s)

DTM 212, 213, 215, 216, 219, 221, 223, 224, 225, 226, 228, 229, 232, 233, 234, 237, Golor



DTM 213

L. & L. Van Ginderen, 6-84

D: 240 tons (410 fl) S: 10.3 kts Dim: 49.8 × 8.6 × 1.6 (2.1 max.) A: 3/20-mm AA (III × 1) M: 3 Gray Marine 64HN9 diesels; 3 props; 625 hp Range: 500/9.3 Man: 27 tot.

Remarks: DTM = Desantni Tenkonosac. Near-duplicates of the World War II German MFP-D class. Nearly all have been equipped with 1-m-wide hull sponsons, extending beam to 8.6 meters and providing space for two mine rails with a total capacity of up to 100 small mines. Bow ramp. Can carry 140 tons of vehicles or 200 men. Seven additional units have been discarded. Unit now named Golor is probably considered an auxiliary.

• 4 DTM 401 class (In serv. 1950s)

D: 227 tons (350 fl) S: 10.3 kts Dim: 46.5 × 6.5 × 1.3 (max.)

A: 5/20-mm AA (III \times 1, I \times 2) -2/mortars

M: 3 G.M. 64HN9 diesels; 3 props; 678 hp Range: 500/9

Remarks: Similar to the DTM 211 class; used on the Danube River. No mine sponsons.

22 601-class (Type 21) landing craft (In serv. 1976-77)

DSC 601 to DSC 622

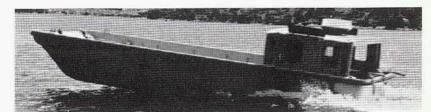
D: 32 tons (fl) S: 23.5 kts Dim: 21.20 × 4.84 × 1.07 (1.58 props)
A: 1/20-mm AA Electron Equipt: Radar: 1/Decca 101 Man: 6 crew

M: 1 MTU 12V331 TC 81 diesel; 2 props; 1,450 hp Range: 320/22

Remarks: DSC = Desantni Jurišni Čamac. Glass-reinforced plastic construction. Bow ramp. Can carry 40 troops or 6 tons in 32 m² cargo area. Offered for export also.

. . . Type 11 vehicle/personnel landing craft

D: 4.8 tons (fl) **S:** 23 kts **Dim:** $11.30 \times 3.00 \times 0.30$



Type 11

1984

AMPHIBIOUS WARFARE SHIPS (continued)

M: 2 diesels; 2 waterjets or 2 outdrives; . . . hp Range: 100/15 Man: 2

Remarks: Glass-reinforced plastic construction. Can carry two jeeps or a squad of troops. Have a small navigational radar.

AUXILIARY SHIPS

♦ 1 Soviet Moma-class hydrographic ship

Bldr: Gdansk, Poland, 1971



Andrija Mohorovičič (PH 33)

D: 1,260 tons (1,540 fl) S: 17 kts Dim: 73.3 × 10.8 × 3.8

Electron Equipt: Radar: 1/Don-2 Man: 56 tot.

M: 2 Zgoda-Sulzer 6TD48 diesels; 2 CP props; 3,600 hp Range: 8,700/11

REMARKS: Transferred in 1972. Carries one survey launch. Five-ton crane for navigational buoy handling. Four laboratories totaling 35 m2 deck space. Used for oceanographic research, hydrographic surveys, and buoy tending.

Bldr: Tito SY, Belgrade (In serv. 1 submarine rescue and salvage ship 10-9-76)

PS 12 SPASILAC

D: 1,590 tons (fl) S: 13.4 kts Dim: 55.50 × 12.00 × 3.84 (4.34 max.)

A: 10/20-mm AA (IV × 2, I × 2) Electric: 540 kVA

Electron Equipt: Radar: 1/. . . nav. - Sonar: . .

M: 2 diesels; 2 Kort-nozzle props; 4,340 hp Range: 4,000/13.4 Man: 53 tot.

REMARKS: Resembles an oilfield supply vessel; low freeboard aft. Sister Aka is in the Iraqi Navy, and another has been sold to Libya. Equipped for underwater cutting and welding, towing, carrying up to 250 tons deck cargo, transferring 490 tons cargo fuel, 48 tons cargo water and 5 tons lube oil. Also capable of salvage lifting, firefighting, and other salvage tasks. Can support divers to 300 m with a 3-section decompression chamber. Also has capability to support a small rescue submersible. Has a bow-thruster and can lay a 4-point moor.

Bldr: Howaldtswerke, Kiel (In serv. 1929) 1 salvage ship

PS 11 (ex-Spasilac)

D: 740 tons S: 14.5 kts Dim: 53.6 × 8.8 × 4.0

M: 1 set triple-expansion reciprocating steam; 1 prop; 2,000 hp Boilers: 2

Remarks: Not scrapped as previously reported when new Spasilac completed in 1976.

♦ 1 cadet-training ship Bldr: Ansaldo, Genoa (In serv. 1938)

GALEB (ex-Kuchuk, ex-Ramb III)



Galeb

L. & L. Van Ginderen, 8-83

D: 5,182 tons (5,700 fl) **S**: 16 kts **Dim**: 121.2 (116.9 pp) \times 15.2 \times 5.6

A: 4/40-mm AA (I×4)-8/20-mm AA (IV×2)

M: 2 Burmeister & Wain diesels; 2 props; 7,200 hp Range: 20,000/16

Remarks: Begun as a commercial banana carrier; used as an auxiliary cruiser and minelayer by the Italian Navy during World War II. Ceded to Yugoslavia after the war. Has been used as the presidential yacht, but is mostly used as a cadet-training ship. Retains old German quadruple 20-mm AA mounts; may still be useable as a

 1 missile-boat tender and command ship Bldr: . . . , Yugoslavia (In serv. 1956)

D: 510 tons (680 fl) S: 17 kts Dim: 57.0 × 8.5 × 3.5

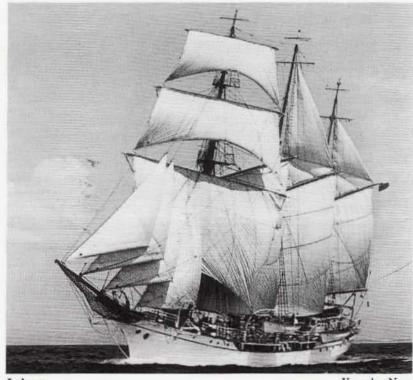
A: 1/40-mm AA - 2/20-mm AA (I × 2) M: 2 diesels; 2 props; 1,900 hp

REMARKS: Resembles a yacht; primarily an administrative flagship.

• 1 topsail training schooner

Bldr: Blohm + Voss, Hamburg (In serv. 1932)

JADRAN



Jadran

Yugoslav Navy

D: 720 tons (800 fl) S: (14.5 sail/9.5 diesel) kts Dim: 60.0 × 8.8 × 4.2 M: 12 Linke-Hoffman diesel; 375 hp Sail area: 933 m²

Remarks: Accommodations for 100 cadets and 20 instructors.

1 riverine command ship

36 Sabač (In serv. 1985)

Bldr: Bordotehnika, Belgrade



Sabač (34) -at launch

Front, 1985

D: Approx. 200 tons (fl) S: . . . Dim: . . . ×

A: . . . Electron Equipt: Radar: 1/Decca 110

M: 2 diesels; 2 props; . . . hp Range: . . . Man: . . .

Remarks: Intended to replace Danube River Flotilla flagship Kozara. Patrol-boat-type hull, with superstructure set well aft.

 1 riverine command ship Bldr: Linzer Schiffswerft, Austria (In serv. 1940)

Kozara (ex-U.S. Oregon, ex-German Brünhild)

D: 535 tons (693 fl) S: 12.4 kts Dim: 67.0 × 9.5 × 1.4

A: 9/20-mm AA (III × 3) Fuel: 44 tons

M: 2 Deutz RV6M545 diesels; 2 props; 800 hp

Remarks: Taken over by U.S. in immediate postwar period, then turned over to Yugoslavia. Used as a floating hotel until 1960, when taken over by the navy. In 1962 recommissioned as flagship of the Danube River Flotilla. Painted blue and white and home-ported at Bosanka Gradiška. May have been stricken 1985 on completion of Sabač.

YUGOSLAVIA (continued)

SERVICE CRAFT

Bldr: Yugoslavia (In serv. 1955-56) • 4 PN 13-class fuel tankers

PN 14 PN 15

D: 420 tons (650 fl) S: 7 kts Dim: 43.2 × 7.0 × 4.2

M: 1 Burmeister & Wain diesel; 1 prop; 300 hp Range: 1,500/7

Remarks: Sister PN 17 transferred to Sudan in 1969. PN = Pomoćni Naftonosac.

• 2 PN 24-class fuel tankers

Bldr: Split SY (In serv. early 1950s)

PN 24 PN 25

D: 300 tons (430 fl) S: 7 kts Dim: 46.4 × 7.2 × 3.2

M: 1 Burmeister & Wain diesel; 1 prop; 300 hp

• 4 PT 71-class cargo lighters

Bldr: Split SY (In serv. 1950s)

PT 73 PT 74 PT 71 PT 72

D: 310 tons (428 fl) S: 7 kts Dim: 43.1 × 7.2 × 4.85

M: 1 Burmeister & Wain diesel; 1 prop; 300 hp

Remarks: PT = Pomoćni Transporter.

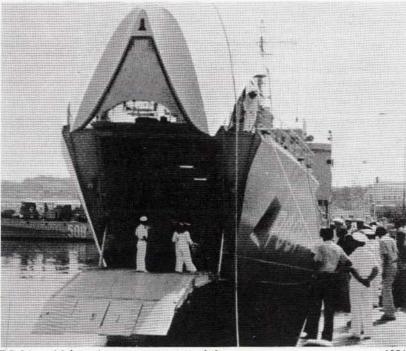
Bldr: Pula and Sibenik SYs (In serv. 1951-59) • 6 PT 61-class cargo lighters

PT 62 PT 63 PT 64 PT 65 PT 66

D: 695 tons (fl) S: 7 kts Dim: 46.4 × 7.2 × 3.2 M: 1 Burmeister & Wain diesel; 1 prop; 300 hp

Bldr: . . . ♦ 1 or more Type PO multipurpose transports

PO 91 PO . . .



PO 91 - with bow visor open, ramp extended

1984

D: 600 tons (860 fl) **S:** 16 kts (sust.) **Dim:** $58.20 \times 11.00 \times 2.75$ (mean) **A:** 1/40-mm AA -8/20-mm (IV \times 2) **Electron Equipt:** Radar: 1/... nav.

M: 2 diesels; 2 CP props; 3,480 hp Range: 1,500/16

Man: 43 crew + 150 fully equipped troops, 6 vehicle drivers Endurance: 10 days

REMARKS: Intended to supply combatants with missiles, torpedoes, mines, and other ordnance, using two slewing cranes on upper deck. Continuous cargo deck can accommodate up to 6 tanks; has a visor-type bow and extendable bow ramp.

5 PO 52-class ammunition lighters

Bldr: Split SY, 1950s

PO 53 PO 54 PO 55 PO 56

D: 695 tons (fl) S: 7 kts Dim: 46.4 × 7.2 × 3.2

M: 1 Burmeister & Wain diesel; 1 prop; 300 hp

REMARKS: PO = Ponoćni Oružar.

◆ 1 water tanker Bldr: Yugoslavia (In serv. 1950s)

D: 200 tons (600 fl) S: 7.5 kts Dim: 44.0 × 7.9 × 3.2

M: 1 diesel; 1 prop; 300 hp

Range: 1,500/7.5

Remarks: Cargo: 380 tons. PV = Pomoćni Vodonosac.

• 4 PR 37-class coastal tugs (In serv. 1950s)

PR 40 PR 38 PR 39

D: 550 tons (fl) S: 11 kts Dim: 32.0 × 8.0 × 5.0

M: Diesels

Remarks: Originally reciprocating steam-propelled; recently re-engined with diesels. PR = Pomorski Remorker.

• 8 LR 67-class harbor tugs (In serv. 1960s)

LR 67 LR 68 LR 69 LR 70 LR 71 LR 72 LR 73 LR 74

Remarks: LR = Lučki Remorker.

. . . diving tenders and utility transports



Diving tender version

1984

D: 43-46 tons (fl) **S:** 12 kts **Dim:** $20.50 \times 4.50 \times 1.42$ A: 2/20-mm AA (I × 2) Electron Equipt: Radar: 1/Decca 101

M: 2 diesels; 2 props; 304 hp Range: 400/12

Man: Diving tender: 6 crew + 4 divers; transport: 60 crew + 70 troops

Remarks: Diving tender displaces 46 tons (fl). Wooden construction. Transport version has 55 m3 for 15 tons cargo in lieu of the 70 troops. Armament is not usually aboard.

REPUBLIC OF ZAIRE

Personnel (1985): Approx. 900 officers and men, plus 600 marines

MERCHANT MARINE (1984): 33 ships - 84,720 grt

PATROL CRAFT

 up to 25 Arcoa class Bldr: Arcoa SY, France (In serv. 1975-81)

Remarks: Original 12 ordered in 7-74; 14 more delivered by 11-80, another 15 delivered 1981; no other data available. For use on lakes and rivers.

Bldr: Swiftships, Morgan City, La. (In serv. • 6 ex-U.S. Swift Mk-II class 1971)

D: 19.2 tons (fl) S: 25 kts Dim: 15.64 × 4.14 × 1.07 A: 6/12.7-mm mg (II \times 1, I \times 4)

M: 2 G.M. 12V71N diesels; 2 props; 860 hp Range: 400/24

Man: 12 tot.

Remarks: Used on inland lakes. Aluminum construction. In poor condition.

Note: There are a number of additional small riverine patrol and logistics support craft. Three North Korean-built torpedo boats delivered 1974, and four Chinese Shanghai-II-class patrol boats delivered 1976-78 are no longer in service.

ZANZIBAR

Although part of the United Republic of Tanzania, Zanzibar has internal autonomy and its own armed forces.

♦ 4 patrol craft Bldr: Vosper Thornycroft, U.K.

D: 70 tons S: 24.5 kts Dim: 22.9 × 6.0 × 1.5

A: 2/20-mm AA (I × 2) M: 2 diesels; 2 props; 1,840 hp

Range: 800/20 Man: 11 tot.

REMARKS: The first two units were delivered 6-7-73, the last two in 1974. Glass-reinforced plastic construction; Keith Nelson design.

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| argen | 432 110 518 397 705 516 571 589 434 431 127 530 241 244 314 397 434 4568 685 583 379 424 435 241 241 244 244 244 244 244 244 244 244 | Vindhyagiri Vindicator Vineta Vinga Vinga Vingh Clipper Virginia Virgo Vis Visaya Vischio Vise (Belgium) Vise (U.S.A.) Vishera Viteazul Vitse Admiral Drozd Vitse Admiral Kulakov Vitorio Veneto Vityaz' Vivies Vizir Vladimir Kavrayskiy Vladimir Kolyachitskiy Vladimir Rusanov Vladimir Rusanov Vladimir Sukhotskiy Vladimir Trefolev Vladivostok (guidedmissile cruiser) Vladi Bagat Vlado Bagat Vlado Bagat | 240 683 133 435 133 727 709 244 434 27 709 558 401 517 522 267 583 230 570 571 587 589 507 584 556 | Wakasa (hydrographic ship). Wakasa (high-endurance cutter). Wakashio. Wakashio. Wakataka Wakeful Wako Nos.1-4 Walchensee Walker Rock Walkerton Wallaby Walrus (G.B.) Walrus (G.B.) Walrus (G.B.) Walrus (Netherlands) Walter Cleal, G.C. Walter E. Foster Walter Krämer Walter Herwig Walter Herwig Walter Herwig Walter Jon Ledebur Walvisbaai Wambrau. Wanamassa Wandelaar Wangerooge Wang Nok Wang Nai Wan Shou Wapakoneta | 296 305 311 313 300 210 313 166 59 201 19 201 150 174 169 25 678 25 461 461 461 454 678 | Whyalla Wichita Wickrama Widder Wielingen (Belgium) Wielingen (Netherlands) Wiesel. Wildwood Wilfred Templeman Wilhelm Florin Wilhelm Pieck. Wilhelm Pieck. Wilhelm Pieck Willemos Wilkes Willamette Willemose Willemose Willemose Willem H. Standley William H. Standley William S. Sims William V. Pratt Willi Bäntsch Will Rogers Wilton Wildon | 14 664 429 163 25 351 160 50 58 150 170 246 668 87 661 667 150 667 150 667 201 414 | Yamal. Yamayuki (destroyer) Yamayuki (coastal patrol boat) Yamayuri Yamazakura Yana Yanaba Yanaba Yanakaze Yan Berzin' Yan Gyi Aung Yankee (class) (cruise missile attack submarines) Yankee (class) (attack submarine) Yankee-I (class) (ballistic missile subs.) Yankee-II (class) Yankee-II (class) Yankee-II (class) Yankae-II (class) Yankae-II (class) Yankae-II (class) Yankae-II (class) Yantain (class) Yantar Yanting (class) Yan-Yan Yaqui Yarhisar | 561 288 308 309 310 563 679 310 540 41 502 506 499 500 73 42 41 585 78 362 340 471 448 | Yung Fu Yung Hsin Yung Jen Yung Jen Yung Ju Yung Kang. Yung Lo Yung Nien Yung Shan Yung Shan Yung Yang. Yunnan (class) Yupiter Yura Yurakaze. Yurikaze Yuriy Godin Yuriy Lisyanskiy Yurka (class) Yu Shan Yushio Yu Tai Yuna. Yuzbasi Tolünay Yuzuki |
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| nta | 553 703 121 | | 731 | Warta | 391 | Witthayakom | 457 | Yavuz | 469 | Zaire |
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| gorous (ocean | | Vyn (class) | 580 | Westensee | 166 | X I | | Yubetsu | 292 | Zingst |
| urveillance ship) | 683 | Vytegra | 562 | Western Samar | 384 | V | 202 | Yucatan | 338 | Zinnia |
| gorous (cutter) | 703 | Vyuga | 576 | Westerwald | 165 351 | Yaegumo | 308 285 | Yucetepe Yuchai (class) | 467 72 | Zlatica |
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| rant | 238 | Waddell | 635 | Wewak | 16 | Yaguar | 538 | Yugumo | 291 | Zond (civilian scientific |
| sten | 436 | Wadsworth | 640 | Whale | 619 | Yaguruma | 309 | Yukan (class) | 71 | research ship) |
| ctor Bugayev | 584 | Wahaka | 679 | Whidbey Island | 654 | Yahiko | 305 | Yukigumo | 308 | Zorkiy |
| ktor Kotel'nikov | 552 | Waheed (Kuwait) | | Whipple | 643 | Yakal | 385 | Yukishio | 311 | Zorritos |
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| le de Quebec | 57 | Wahpeton | 355 | White Pine | 707 | Yamagiri | 308 | Yung An | 452 | Zurara |
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| nash | 241 | Wakahikari | 313 | White Sumac | 707 714 | Yamakaze | 310 307 | Yung Ching | 452 452 | Zwickau |

ADDENDA

Through 31 January 1986

ALGERIA

License options to build three additional Brooke Marine 37.5-m ("Kebir")-class patrol boats for the Coast Guard were purchased 11-85; 346, the fourth Mers-el-Kebir-built unit of the design, was delivered 10-11-85.

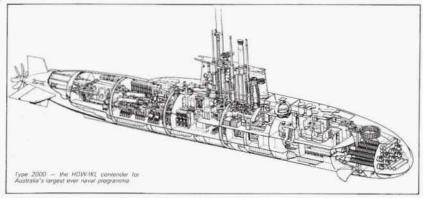
ARGENTINA

Naval Aviation: Delivery of 12 ex-Israeli A-4 Skyhawks had not occurred as of 12-85. Israeli Aircraft Industries is to deliver a Boeing 707 equipped for maritime surveillance during 1986.

MEKO 140 A16-class frigate Espora (P 4) was commissioned 5-7-85. Submarine San Juan (S 34) was accepted 18-11-85 and left for Argentina shortly thereafter; she may be delivered later to another navy. In general, Argentine naval steaming hours have been sharply curtailed, and readiness has suffered greatly.

AUSTRALIA

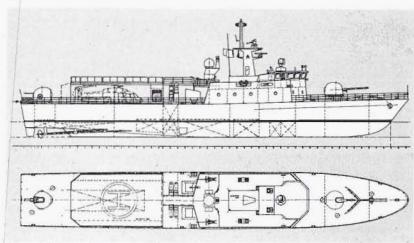
15,536 personnel were authorized for naval service in 1985-86.



HDW's entry in the R.A.N. submarine program

Future R.A.N. frigates will be of a new design, not a variant of the U.S. FFG 7 class. Patrol boat *Wollongong* (P 206) grounded 31-5-85 in Bass Strait; has been salvaged and re-entered service 11-85, minus her cruising engine. *Attack*-class patrol boat *Assail* (P 89) transferred to Indonesia 18-10-85. Landing craft *Balikpapan* (L 126), *Labuan* (L 128), *Tarakan* (L 129, on 4-1-85), and *Wewak* (L 130, on 16-8-85) are in land-storage reserve; *Brunei* (L 127) and *Betano* (L 133) have been refitted as inhore survey craft, to operate with *Flinders* (A 312) and her survey launch, *Bramble*. Replenishment oiler *Success* (AOR 304) began sea trials 11-85. Tender *Banks* (AG 244) has served as reservist training ship in Darwin since 18-10-85.

BAHRAIN



Type 62-001 missile corvette

Lürssen, 1985

Two additional TNC-45-class missile boats reported ordered 6-85.

BANGLADESH

Nirbhoy, commissioned 1-12-85, is a probable Chinese "Hainan"-class submarine chaser. Two Chinese Type 069 landing craft were deliver 1984 for use as survey craft:

A 581 Darshak A 582 Talleshi



Khadem (A 721) - Chinese Dinghai class

1984

D: 83 tons (fl) S: 11.5 kts (light) Dim: $24.1 \times 5.2 \times 1.1$ M: 2 Type 12V150 diesels; 2 props; 600 hp

BELGIUM

The surviving riverine patrol boats are *Meuse* (P 903, in serv. 20-8-53, guardship at Antwerp) and *Liberation* (P 902, used for recruiting and public relations). Boëlwurf, Temse, is building a 20-kt fisheries patrol craft for delivery during 1986. Minehunter *Aster* (M 915) was placed in service 16-12-85.



Aster (M 915)

L. & L. Van Ginderen, 12-85

BOLIVIA

Aluminum-hulled patrol craft Santa Cruz de la Sierra (PR 51) was delivered 1985 by Hope/Progessive Shipbuilding, Houma, Louisiana, and traveled to Bolivia under her own power:



Santa Cruz de la Sierra (PR 51)

Hope, 1985

D: . . . S: . . . Dim: 20.4 × . . . × A: 1/20-mm AA M: 2 G.M. diesels; 2 props; . . . hp Electron Equipt: Radar 1/Furuno . . .

BRAZIL

Naval Aviation: In 10-85, it was announced that 6 AS.332 Super Puma helicopters and additional Esquilo (AS.350) helicopters are to be acquired. Sixteen used Bell 206B

JetRanger helicopters were acquired for pilot training, 3-85.

Submarine *Tupi* laid down 8-3-85 by Howaldtswerke for delivery 1988; a second German-built unit is to deliver 1989, and *three* are to be built in Brazil. Frigate *Jaceguary* laid down 15-10-84 for launch 6-86 and delivery 4-88; the seventh through twelfth ships of this class are to carry Brazilian-developed Barracuda anti-ship missiles and Avibras SSA-N-1 surface-to-air missiles (units 3 and 4 had still not been ordered by end 1985). The four Mk 10 ASW frigates are to be backfitted with 4/Exocet SSM each; all six Mk 10 will get Plessey Shield decoy RL. U.S. *Sotoyomo*-class patrol tugs *Tritão* (R 21), *Tridente* (R 22), and *Triunfo* (R 23) are to be replaced by three oil-field supply tugs built by ESTENAVE at Manaos and acquired from PETROBRAZ in 1985; a helicopter deck will be fitted.

Porto Esperanca, the first of three planned gunboats for the Paraguay River was laid down at the Rio de Janeiro Naval Arsenal 14-1-85; two others are to be ordered in 1986 and 1987 from private yards:

D: 270 tons (380 ft) **S:** 12 kts **Dim:** 49.33 (45.57 pp) \times 8.45 \times 1.40

M: . . . Man: 8 officers, 54 men

REMARKS: Will have a helicopter deck and carry 2 LCVP landing craft.

Buoy tender H 21 is named Sirius. Impounded U.S. fishing boats Sea Horse and Condor have been adapted as buoy tenders, while ex-Night Hawk is used as a yacht. Sail yacht Cisne Branco is in naval service. Buoy tender Tenente Boanerges (H . . .) was completed 1985.

CANADA

Frigate Halifax (FFH 330) laid down 8-85. The submarine replacement program has slipped several years, with deliveries now planned for 1995-97 vice 1992-94. Not all "Tribal"-class destroyers may receive the TRUMP modernization. The six St. Laurent-class frigates will be decommissioned 1986-87, with Fraser, Skeena, and Ottawa to be refitted (as will be the harbor training hulk St. Croix, at Halifax since 1973).

Coast Guard: Light icebreaker Walter E. Foster stricken 10-7-85 after boiler "collapse." Edward Cornwallis to strike 1986. Icebreaker Norman McLeod Rogers re-engined with two Ruston HP16 RKC diesels (8,000 hp total) from 7-11-83 to 14-9-84; gas turbines removed, crew now 78. New Type 1100 icebreakers Sir William Alexander and Edward Cornwallis will have buoy derricks stepped from a kingpost forward, vice stepped on the face of the bridge, as in their sisters. Type 1000 icebreaker Simon Fraser has been refitted for search-and-rescue duties. Narwhal (Type 1100) to complete refit 2-86. Type 600 SAR cutter Mary Hichens in Coast Guard service 19-4-85. Small rescue craft Sterne (Type 100), based in the Laurentian region, entered service 1985; originally to have been named L'Oie Blanche.



Samuel Risley (Type 1050) - Coast guard

L. & L. Van Ginderen, 8-85

Department of Fisheries and Oceans patrol ship *Leonard J. Cowley* entered service 8-5-85.



Leonard J. Cowley

West Coast Manley, 1985

CHILE

Cruiser ex-Chacabuco (ex-Prat, ex-Nashville, C 243) towed to Taiwan for scrap, 1985. Only two ex-Israeli Reshev-class missile boats have been delivered. BATRAL-type landing ship Chacabuco (AP 93) launched 16-7-85. Small harbor tanker Aquila (AP 48, ex-Australgas), built in Denmark, is in naval use:

D: 397 tons (fl) **S:** 10 kts **Dim:** $51.3 \times 8.7 \times 4.2$

M: Diesels Range: 6,000/10

CHINA

The air-dropped version of the HY-2 anti-ship missile (Chinese Styx copy) is referred to as the C801 and is officially stated to have a range of 95–100 km, a speed of Mach 0.9 and a length of 7.38 m; two can be carried by Badger aircraft. Jianghu-class frigates remain in production; they and the two Jiangdong-class frigates are powered by two SEMT-Pielstick 12PA6 diesels. Five G.E. LM-2500 gas turbines have been ordered from the U.S. A prototype submarine-launched cruise missile was reportedly launched from land early in 10-85. A guided-missile frigate (probably a Jianghu-class unit) was launched 28-12-85 at Shanghai. Three of the 20 remaining Super Frélon helicopters are to be converted for ASW duties.

COSTA RICA



65-ft. patrol boat FP 657

Swiftships, 4-85

Also delivered to Costa Rica during 1985 were two 10.36-m and one 12.80-m patrol craft from Swiftships, Inc., Morgan City, Louisiana.

CUBA

Four Soviet Stenka-class patrol boats were delivered during 1985, two in March and two in August; they differed from the standard Soviet model in lacking all ASW equipment, including the 4/400-mm ASW TT. A fourth Sonya-class minesweeper was delivered 12-85. The 3,600 grt/5,631 dwt merchant tanker *Las Guasimas*, delivered 1978 by Niigata, Japan, is equipped for underway alongside refueling:

D: Approx. 8,300 tons (fl) **S:** 12.75 kts **Dim:** $106.99 (100.01 \,\mathrm{pp}) \times 14.84 \times 6.99$ **M:** 1 diesel; 1 CP prop; 4,000 hp **Fuel:** 862 tons **Electric:** 900 kw

DENMARK

Three of Norway's Type 207, Kobben-class submarines are to be purchased for delivery 1987-89, after refit. Both Peder Skram-class frigates are to be reduced to reserve during 1986. Fisheries protection frigate Vaedderen has been equipped with a large, inflated radome atop her mast. The contract for the first "Standard-Flex" patrol boat (plus an option for six more) was signed with Aalborg Vaerft on 27-7-85; the first hull and the hull mold will be built by Karlskronavarvet. The prototype, to be armed with a new 76-mm OTO Melara "Super-Rapid" gun, is to be delivered by mid-1987 (the hull was begun 15-8-85 for delivery to Aalborg in 6-86) and will be powered by a G.E. LM 500 gas turbine and two diesels driving three shafts.

A new class of fisheries protection frigates to replace the *Hvidbjørnen* class was being designed by Y-ARD early in 1986 under contract to the Danish Navy. The ships will displace over 1,970 tons and will carry a 76-mm gun and a helicopter.

DJIBOUTI

Moussa Ali, the first of two PLASCOA patrol craft, was completed 8-6-85.

ECUADOR

Halter Marine, New Orleans, is building several small patrol craft for delivery 1986. Neville Boatyard, Louisiana, is reported to be building two 15-m patrol craft, with a further four to be built in Ecuador with U.S. technical assistance.

EGYPT

Two "Tripartite"/Alkmaar-class minehunters were ordered from Van der Giessen de Noord, the Netherlands, on 6-3-85.

EL SALVADOR



GC-11, with 2/12.7-mm mg

Swiftships, 6-85

Six 10.97-m riverine patrol craft are to be delivered by Lantana Boatyard, Lantana, Florida, in mid-1986; see photo and data under Honduras entry in addenda for appearance and characteristics.

ETHIOPIA

A Soviet Turya-class semi-hydrofoil torpedo boat was delivered during 2-85, apparently without dipping sonar equipment.

FIJI

No final decision had been announced by end-1985 as to whether to proceed with indigenous patrol boat construction or to accept an Australian Government offer of four "Pacific Patrol Boats" of the type being built for Papua New Guinea,

FINLAND

The second Helsinki-class guided-missile boat, Turku (61) was delivered 1-6-85 and the third, Oulu (62) on 1-10-85; both have two twin 23-mm AA (vice Helsinki's one), Argo EW gear, a DataSaab EOS-400 optronic fire-control system, and a revised pilothouse window configuration. The Coast Guard ordered three Agusta-Bell AB 212 helicopters for SAR duties in 1985. A second "Karhu II" icebreaker was ordered from Wärtsilä late in 1985.

FRANCE

Latest data on the nuclear-powered aircraft carrier Richelieu, officially ordered 23-1-86:

D: 34,000 tons normal (36,000 fl) S: 28 kts (trials speed)

Dim: 261.50 (238.00 pp) × 64.36 (31.50 wl) × 8.50

A: 35-40/fixed-wing aircraft and helicopters — 2/SAAM vertical-launch SAM groups (40-48 missiles) — 2/SADRAL point-defense SAM

Electron Equipt: Radar: 2/Decca . . . nav., 1 DRBJ 11B, 1/DRBV 15C, 1/DRBV 27, 1/ . . . SAAM f.c., 1/DABJ 113

EW: ARBR 17, ARBB 33, 4/Sagaie decoy RL IR: DIBV 10 Vampir

M: 2 Type K15, 150-mw pressurized water reactors; double-reduction geared steam turbines; 2/4-bladed props; 83,000 hp

Electric: 15,400 kw (6/2,000 kw turbo-alternators, 4/850 kw diesel sets)

Man: 1,150 ship's company + 550 air group

Remarks: The angled deck will be 195-m long, at an angle of 8.5-deg. The two 75-m steam catapults will be of the U.S. Type C13 vice C7. There will be three deck arrester wires and a barrier. The two elevators will be of 40-ton capacity, vice 50-tons. The Syracuse II satellite communications system will be fitted.

Carriers Clemenceau (R 98) and Foch (R 99) are receiving two Sagaie decoy RL as part of their modernizations, as are the two Suffren-class guided-missile destroyers. The P 400-class patrol boat La Tapageuse (P 691) was laid down 13-8-85.



Aconit (D 609) - after modernization

French Navy, 1985

The fourth Rubis-class submarine (S 604) has been named Émeraude; the fifth may be named Perle.

A second commercial oiler for Indian Ocean freighting service under charter to the French Ministry of Defense was reported to have been ordered late 1985. Data, as for the initial unit:

D: 32,000 tons (fl)
 S: 14.5 kts
 Dim: 178.00 (165.02 pp) × 27.50 × 15.30
 M: 1 SOCATRA-Burmeister & Wain 6L-67 GBE diesel; 1 prop; 11, 110 hp

Remarks: Will be capable of alongside underway liquid replenishment.



Orion (M 645)

L. & L. Van Ginderen, 12-85





La Pérouse (A 791)

A. Baker, 1-86



Commandant Rivière - sonar trials ship

French Navy, 12-85

EAST GERMANY

A third Tarantul-I-class guided-missile corvette was delivered during 1985.



Albin Kobis - Tarantul-I class

1984

WEST GERMANY

The first of the two Type 122 frigates ordered during 1985 is to be named Augsberg, vice Braunschweig. Former Zobel-class torpedo boat Hermelin (P 6095) has been renamed Kor-Z as a Type 740 target craft.

Landing craft LCM 15 has been retyped as an auxiliary and renumbered A 1408. Small electronics intercept craft Holnis has been renumbered A 836. Two Type 442 intelligence-collection ships are to replace the three Type 442/422 units now in use:

♦ 0 (+2) Type 442 intelligence collectors

Bldr: Flensberger SB

Laid Down In Serv. A. . . N. . .

Dim: 83.5 × 14.6 × . . . (9.4 moulded depth) D: 2,400 tons (fl) S: . . M: Diesels: . . . Man: 40 tot.

REMARKS: Will have three crews for the two ships. Harbor tanker Borkum (Y 824) remains in service:

1 Class 763 harbor oiler

Bldr: Flenderwerke, Lübeck

In serv.

Y 824 Borkum (ex-A 54, ex U.S.N. 105, ex-Borkum) 25-3-36 19-5-36



Borkum (Y 824)

H. Ehlers, 9-85

D: 268 tons (light) S: 8 kts Dim: 37.52 (34.50 pp) × 7.60 × 3.60 (max.) Electron Equipt: Radar: 1/ . . . nav. Electric: 24 kw M: 18-cyl. MWM diesel; 1 prop; 150 hp Man: 6 tot.

Remarks: Served U.S. Navy 1954 until recommissioned in Bundesmarine 1-11-56. Stationed at Wilhelmshaven. Cargo: 286 tons.

Two additional KW 15 (Type 369) rescue tenders remain in service: H 11 (Y 857, ex-FL 5) and H 13 (Y 859, ex-FL 7). KFK-class wooden-hulled tender KW 3 (Y 829) remains in service as a radio calibration craft at Wilhelmshaven. Net tender trials craft SP 1 has been renumbered A 837 (ex-Y 837):



SP 1 (A 837)

H. Ehlers, 9-85

GREAT BRITAIN

Carrier Ark Royal (R 07) does not carry the twin 30-mm AA shown in the drawing in the text; Invincible to refit 4-86 to 7-88 at Devonport to Ark Royal standard, with 12-deg. ramp. Trafalgar-class submarine Triumph (S . . .) was ordered 12-85 from Vickers. Three Upholder-class diesel submarines were ordered 12-85 from Cammell-Laird, Birkenhead. Oberon-class submarines are receiving the MEL Manta EW suite. The three additional "Duke" (Type 23)-class frigates to have been ordered by the end of 1985 (including the second unit, which was to have been built by Swan Hunter) have been delayed until 6-86. Cornwall (F 99) of the Type 22 Batch 3 class was launched 14-10-85. Yarmouth (F 101) of the Rothesay class reported due for disposal 1986.

Data for the P.2000-class training patrol craft should read:

D: 38 tons (43 fl) S: 22.5 kts Dim: 20.80 (18.00 pp) × 5.80 × 1.50

A: None Electron Equipt: Radar: 1/Decca AC 1216C

M: 2 Perkins CV M800T diesels; 2 props; 1,590 hp (1,380 sust.) Range: 330/20; 500/15 Electric: 62 kVA Man: 11 tot.

Remarks: Example (P 153) delivered 13-8-85 to Royal Naval Auxiliary Service, as was Explorer (P 154) on 6-9-85. Archer (P 264) launched 25-6-85, delivered 9-8-85, and commissioned 13-8-85. Biter (P 270) delivered 23-8-85, and Blazer (P 279) delivered 12-9-85 - all to the RNR.



Turbulent (S 87)

G. Arra, 8-85

Sandown (M . . .), first of the "Single-Role Mine Hunter" type, was ordered 28-8-85 from Vosper-Thornycroft for delivery 3-89:

D: less than 500 tons (fl) S: 13 kts Dim: 52.50 (50.00 pp) × 9.50 × 2.10

A: 1/30-mm Rarden AA

Electron Equipt: Radar: . . . - Sonar: Type 2093

M: 2 Paxman Valenta RP 200E 1500 diesels; 2 vertical cycloidal props; 3,000

hp-bow-thruster

Range: 3,500/12 Electric: 750 kw Man: 7 officers, 33 men

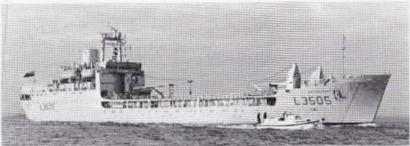
Remarks: Will travel at up to 6.5 kts on auxiliary electric drive while minehunting.



Itchen (M 2009) - "River" class

M. Louagie, 8-85

New landing ship $Sir\ Galahad$ will be powered by two Mirrlees-Blackstone 9K Major Mk 3 diesels; 2 props; 13,320 hp. Armament will be: 2/40-mm AA (I \times 2), 2/20-mm AA (I \times 2). $Sir\ Lamorak$ (L 3532) was sold commercially 11-85 as $Marchant\ Trader$. $Sir\ Tristram$ (L 3505) re-entered service 9-10-85 after repair, modernization, and lengthening; the mast and superstructure were revised, and a Chinook helicopter can now land amidships.



Sir Tristram (L 3505) - as rebuilt

L. & L. Van Ginderen, 10-85

Survey ship Herald (A . . .) was launched 14-11-85.

♦ 1 chartered stern trawler Bldr: Goole SB & Repairing, Goole

ARCTIC FREEBOOTER: (In serv. 2-66)

D: . . . S: . . . Dim: 67.79 (64.62 wl) × 12.63 × . . .

Electron Equipt: Radar: . .

M: 1 6-cyl., 4-stroke Mirrlees National diesel; 1 CP prop; 2,380 hp Man: . . . Remarks: Chartered from Boyd Line fall 1985 to replace chartered trawler Northella as submarine escort at Faslane. Also used to observe Soviet intelligence collectors off U.K. coast.



Chartered trawler Northella

L. & L. Van Ginderen, 11-85

Northella, chartered 10-83 for navigational training and submarine security duties in the Clyde area, transferred to Portsmouth late in 1985:

D: 1,238 grt S: 16.5 kts Dim: 70.2 (65.2 pp) × 12.6 × 4.9

M: 1 Mirrlees-Blackstone KMR-7 Major diesel; 1 CP prop; 3,246 hp

Seagoing tug Confident (A 290) was stricken by end 1985.

The Royal Air Force's Marine Branch was to be disestablished 31-3-86, with the following craft to be retained by the government and operated and maintained by James Fisher, Ltd., in their former roles: Seal (5000), Seagull (5001), Spitfire (4000), Halifax (4003), Hampden (4004), Hurricane (4006), Lancaster (4006), Wellington (4007), and 1300-series rescue pinnaces 1374, 1387, 1389, 1390, and 1392. Sunderland (4001) and Stirling (4002) were transferred to the Royal Navy at Gibraltar on 29-8-85 as HMS Hart and Cormorant, respectively.



Spitfire (4000)

L. & L. Van Ginderen, 7-85

GREECE

Training ship Aris (A 74) has a top speed of 17.8 kts (15 sust.) and has a crew of 21 officers, 34 petty officers and warrants, and 60 men, plus up to 359 cadets. A 1986 refit will provide a new CIC and full helicopter facilities (including reactivating the hangar) for an Alouette-III or AB 212 helicopter.

HONDURAS

A third Lantana 32-m patrol boat is under construction, for delivery 6-86; it will be powered by 3 G.M. 16V92 TI diesels. Armament includes a G.E. 20-mm Sea Vulcan gatling gun, which will be backfitted to the other two craft. Eight river patrol craft were delivered 3-2-86 from Lantana Boatyard, Lantana, Florida:



Lantana 11-m patrol craft

Lantana, 1-86

D: 8.16 tons (fl) **S:** 26 kts (22 sust.) **Dim:** $11.00 (10.06 \text{ wl}) \times 3.05 \times 0.53$

A: 2/12.7-mm mg (I \times 2) -2/7.62-mm mg (I \times 2) M: 2 Caterpillar 3208 TA diesels; 2 props; 630 hp

Endurance: 5 days Man: 5 tot.

Remarks: Aluminum construction with Dupont Kevlar armor. Sisters building for El Salvador.

INDIA

Eight additional Sea King helicopters were ordered 7-85, for a total of 20. Cruiser *Mysore*, out of service for many years, officially stricken 29-8-85. Frigate *Ganga* commissioned 1-1-86. Landing craft L 37 launched by Goa SY, 22-7-85.

INDONESIA

Australian Attack-class patrol boat Assail is to be delivered 1986 as Sigurot (8. . .). The two Lerici-class minehunters are to be delivered 8-87 and 3-86.



Teluk Ende (517) — with helicopter hangar, enlarged superstructure R.A.N., 1982

IRAQ

Frigate Al Qadissiya (F 17) was launched 6-85.

ISRAEL

A program to construct two $117.0 \times 17.0 \times 2.1$ -m tank landing ships to carry 12 tanks, 14 armored personnel carriers, 250 troops, and two helicopters each was canceled during 1985.

ITALY

Small carrier *Giuseppe Garibaldi* (C 551) was delivered 31-7-85 and commissioned 30-9-85, but will not be fully operational until 1987. The government gave permission for a program to acquire V/STOL fixed-wing aircraft for the ship on 6-8-85.



Giuseppe Garibaldi (C 551)

Italian Navy, 1985

Latest data for the Animoso-class guided-missile destroyers:

D: 5,300 tons (fl) S: 31.5 kts Dim: 135.60 × 16.10 ×.

A: 8/Otomat Mk 2/Teseo SSM (II \times 4) — 1/Mk 13 SAM launcher (40 standard SM-1 MR) — 1/Albatros SAM syst. (VIII \times 1, . . . Aspide missiles) — 1/127-mm 54-cal. OTO Melara DP — 3/76-mm OTO Melara Super Rapid DP (I \times 3) — 6/324-mm ILAS-3 ASW TT (III \times 2) — 2/AB-212 ASW helicopters (EH.101 later)

Electron Equipt: Radar: 1/MM/SPS-703 nav., 1/MM/SPS-702 surf.-search, 1/MM/SPS-768 air-search, 1/SPS-52 3-D, 2/SPG-51, 1/RTN-30X Dardo

Sonar: . . . bow-mounted, . . . VDS EW: . . . intercept, 4/ . . . chaff RL

M: CODOG: 2 LM-2500 gas turbines (27,500 hp each), 2 GMT BL230-20 DVM diesels (6,300 hp each); 2 CP props; 12,600/55,000 hp

Man: 400

The "Super-Rapid" version of the OTO Melara 76-mm gun will be installed on the corvettes of the *Minerva* class. *Minerva* and *Urania* were laid down 3-85 and 4-85, respectively, at Riva Trigoso. Landing ship *San Giorgio* (L 9892) was laid down 1-7-85 for launch in fall 1986; sister *San Marco* laid down 9-85 for launch 6-87.



Maestrale (F 570)

G. Arra, 8-85



Milazzo (M 5552) - Lerici class

G. Arra, 7-85



Quarto (A 5314)

G. Arra, 7-85



Pietro Cavezzale (A 5301)

G. Arra, 7-85



Anteo (A 5309)

G. Arra, 7-85

Five offshore patrol vessels are to be ordered during 1986 as part of a new Navy-operated fisheries and economic resources patrol force:

♦ 5 Cassiopeia class

| | Bldr | Laid Down | L | In serv. |
|------------|-------|-----------|---|----------|
| CASSIOPEIA | ٠ | | | |
| Libra | **** | 1.15 | | |
| ORIONE | | | | |
| SPICA | 2.4.4 | | | |
| Mana | | | | |

D: 1,002 tons (1,361 fl) **S:** 19+ kts **Dim:** 73.2 (68.0 pp) \times 11.6 (11.4 wl) \times 3.6

A: 1/76-mm DP—. . .—1/helicopter

Electron Equipt: Radar: . . .

EW: intercept gear

M: 2 diesels; 2 props; 6,400 hp Electric: . . . Range: 5,000/15 Fuel: 165 tons Man: . . .

REMARKS: Intended to operate in up to Sea State 5-6. Equipped for rescue, firefighting, and supply duties. The 76-mm guns will replace older OTO Melara "Allargate" models, removed from discarded warships. There will be a telescopic helicopter hangar and a 22-m × 8-m flight deck, with fuel for 90 hours of aircraft operations.

IVORY COAST

The acquisition of two 65-m patrol boats is planned.

JAMAICA

Paul Bogle (P 8), a "Guardian"-class patrol boat, was completed by Lantana Boatyard, Lantana, Florida on 26-9-85:

D: 93 tons (fl) S: Over 30 kts Dim: 32.31 × 6.25 × 1.24 (2.13 props)

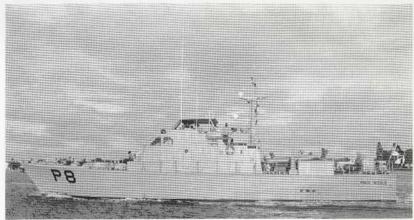
A: 1/20-mm AA -2/12.7-mm mg (I \times 2)

Electron Equipt: Radar: 2/Furuno . . . nav.

M: 3 MTU 396 TB92 diesels; 3 props; 3,600 hp Endurance: 7 days Man: 4 officers, 16 men

REMARKS: Originally to have been named Cape George. Aluminum construction. Two G.M. 4-71 generator sets.

Patrol boat Fort Charles (P 7) overhauled 1985-86 by Atlantic Marine, Florida.



Paul Bogle (P 8)

Lantana, 9-85

JAPAN

Approved under the FY 86 Budget were one 3,400-ton destroyer (DDK 138), one 1,900-ton frigate (DE 229-new design), one 2,400-ton Yushio-class submarine (SS 583), two 440-ton minesweepers (MSC 668, 669), one 2,200-ton training support ship (ATS 4202), one 420-ton landing craft (LCU), two 260-ton tugs (YT 68, 69), and a 12-ton self-propelled lighter (YF). Aircraft approved were 10 P-3C Orion, one US-1A rescue amphibian, 13 HSS-2B Sea King ASW helicopters, four MH-53E minesweeping helicopters, one KM-2 Kai basic trainer, and one TC-90 instrument trainer.

The 1986-90 aviation procurement plan calls for 50 P-3C Orion, 36 SH-60J Sea Hawk

ASW helicopters, 30 HSS-2B Sea King ASW helicopters, 12 MH-53E Sea Dragon minesweeping helicopters, 3 Shin Meiwa US-1 SAR amphibians, and 3 Learjet 36A jet trainers. Previous orders through 1985 include 49 P-3C (21 in service by 1985), 2

SH-60J, 54 HSS-2B, 10 US-1, and 2 Learjet 36A. Maritime Safety Agency medium-endurance cutter PM 11 was launched 20-8-85 and delivered 11-85.

SOUTH KOREA



Seoul (952) - Ulsan class

1985



Pack Ku 58 (PGM 358) - with 4 Harpoon

1985

KUWAIT

On 25-7-85, Azimut SY, Torino, Italy, delivered glass-reinforced plastic Customs Service patrol craft Jamarek I and II:

D: 26 tons (fl) **S:** 28 kts **Dim:** 18.40 (15.50 pp) \times 5.10 \times 0.93

M: 2 MAN D2842-LE diesels; 2 props; 1,520 hp Fuel: 3.75 tons

A larger Customs Service craft was ordered from Azimut in 6-85:

D: 30 tons (fl) **S:** 27 kts **Dim:** $20.00 \times 5.10 \times 1.50$

M: 2 MAN D2842-LE diesels; 2 props; 1,560 hp

LIBYA



Tariq Ibn Ziyad (416) and sister in dry dock at Malta—a fourth Nanuchka-II was delivered during 9-85

L. & L. Van Ginderen, 1985

MADAGASCAR

A former French Navy EDIC landing craft was transferred 28-9-85 and named Aina Vao Vao.

MALAYSIA

The possibility of acquiring submarines was under study during 1985. The *Lerici*-class minehunters have been renumbered M 11-14. They were commissioned together 11-12-85 and were to leave Italy on 19-1-86, for arrival in home waters around 28-3-86.



Jerai (M 12) - with 40-mm AA forward

G. Arra, 7-85



Jerai (M 12) — PAP 104 stowed aft

G. Arra, 7-85

MOROCCO

Three austere versions of the Spanish Lazaga class for 200-n.m. economic zone patrol were ordered from Bazán 2-10-85, with an option for three more:

D: 300 tons (. . . fl) S: 22 kts Dim: 58.1 (54.4 pp) × 7.60 × 2.70

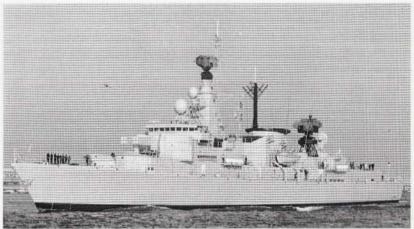
A: 1/40-mm AA -2/20-mm AA (I \times 2)

Electron Equipt: 1/ . . . nav.

M: 2 diesels; 2 props; . . . hp Range: 3,290/12

NETHERLANDS

Submarine Dolftjin (S 808), stricken 1-2-85, sold for scrap 22-7-85. The second increment of four "M" (De Zeven Provincen)-class frigates was officially ordered 1-8-85. Ten "Goalkeeper" 30-mm CIWS were ordered 12-85 for installation in the Kortenaer class. Three landing craft were ordered 6-85 from Schöttel at Warmond, presumably follow-on units of the L 9530 group. Former destroyer Gelderland (D 811), static training ship, has had her radar antennas replaced; former minesweeper Grypskerk (M 826) still exists as a training hulk.



Jacob Van Heemskerck (F 812)

Maritime Photographic, 10-85



L 9532 - new landing craft

L. & L. Van Ginderen, 9-85



RP 16 - National Police Force

L. & L. Van Ginderen, 9-85

NEW ZEALAND

Frigate Wellington (F 69) has a range of 6,500 n.m. at 12 kts after modernization, through the addition of 220 tons additional fuel tankage (D: 3,184 tons fl); she is now equipped with the Graseby G 750 hull-mounted sonar.

NIGERIA

The Coast Guard took delivery of P 215, the first of two MillSpeed P/20 patrol boats from Van Mill Marine Service, Hardinxveld-Giessendam, the Netherlands:

D: 45 tons (fl) **S:** 35+ kts **Dim:** $20.20(18.00 \text{ wl}) \times 5.30 \times 1.75$

A: 1/20-mm AA - 2/7.62-mm mg (I × 2) Electron Equipt: Radar: . . . nav.

M: 3 G.M. 12V71 TI diesels; 3 props; 2,100 hp

Range: 950/25; 1,200/11 Man: 2 officers, 10 men

Remarks: Glass-reinforced plastic construction.

Two P.2000 patrol boats have been ordered from Watercraft, Ltd. for delivery 3-86:

D: 45 tons (fl) S: 30 kts Dim: 21.80 (19.00 wl) × 5.80 × 1.50

A: . . . Electron Equipt: Radar: 1/ . . . nav. M: 2 MTU 8V396 TB93 diesels; 2 props; 2,600 hp (2,176 sust.)

Remarks: Glass-reinforced plastic construction. Hulls 1-m longer than standard P.2000. May be intended for the Marine Police.

NORWAY

Three Type 207, Kobben-class submarines are to be refurbished for sale to Denmark. delivering 1987-89. The generators in the new Type 210 submarines will be powered by two MTU 16V652 MB diesels.

OMAN

A fourth "Province"-class guided-missile patrol boat was ordered 12-85 from Vosper-Thornycroft for delivery late 1988/early 1989; the unit will be equipped like the second and third Omani examples of the class. The Royal Omani Coast Guard reportedly ordered two 8.5-m glass-reinforced plastic patrol craft from Gulf Crafts, Ajman, UAE, in 1985; two 140-hp Evinrude outboard motors give 40-kt speeds.

PAPUA NEW GUINEA

The order for four 31.5-m patrol boats from Australia was placed 31-10-85.

PERU

Former U.K. "Colonies"-class cruiser Colonel Bolegnesi was towed to Taiwan for scrap 8-85. Two additional Friesland-class destroyers may be discarded during 1986-87, reducing the total to four.

PORTUGAL

The contract for three MEKO 200 frigates was signed with the Howaldtswerke-Blohm + Voss consortium on 11-12-85. Platform data will be generally similar to the quartet building for Turkey, but U.S., Canadian, and Norwegian electronics and armament equipment will be fitted.

SOUTH AFRICA

According to an official statement by the Chief of Naval Operations, South African Navy, the following units may have to be decommissioned to effect necessary economies: frigate President Pretorius, the five "Ford"-class units, net tender Somerset, and the just extensively refitted oiler/search-and-rescue ship Tafelberg.

SPAIN

Bazán, San Fernando launched P 53, the first of two "Cormorant"-class patrol boats built on speculation, on 15-10-85; no customer has been announced:

D: 357 tons (fl) S: 32 kts Dim: 52.02 × 7.54 × 1.87

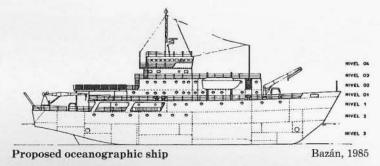
A: . . . Electron Equipt: .

M: 3 Bazán-MTU MA16V956 TB91 diesels; 3 (1 CP) props; 11,250 hp

Range: 2,000/15.5 Man: 30 tot.

Remarks: Rumored sale to Somalia did not materialize.

A design for a new oceanographic ship has been prepared by Bazán; if built, the ship will be paid for by the Ministry of Foreign Affairs, but operated by the Navy.



D: 2,600 tons (light) **S**: 15 kts **Dim**: $67.00 \text{ (pp)} \times 14.00 \times 4.80$

M: 3,600-bhp diesel generator plant, electric drive; 1 prop; 2,700 hp (bow- and stern-thrusters)

REMARKS: Icebreaker bow for Antarctic duties. Helicopter deck, but no hangar. Endurance of 100 days. Diver-support to 200 m. Total 330 m² laboratory space.

SRI LANKA

Two landing craft were ordered from Vosper PTY, Singapore, during 1985:

D: 200 tons S: 8 kts Dim: 30.00 × 8.00 × 1.50 M: 2 Caterpillar 3408TA diesels; 2 props; 1,524 hp Range: 1,800/8 Man: . . .

The last two of ten follow-on orders for the Cougar CAT 900 patrol craft were delivered 10-85

TAIWAN

Nine additional S-2E Tracker ASW aircraft were delivered from surplus U.S. stocks late in 1985. The prototype patrol boat delivered during 1985 from Vosper PTY, Singapore, has the following characteristics:

D: . . . S: 40 kts Dim: 21.0 × . . . × . . .

A: 1/20-mm AA-2/12.7-mm mg (I × 2)

M: 2 G.M.-Stewart & Stevenson 16V92M TAB diesels; 2 props; 2,400 hp



Transport Tai Hu (525)

Military Technology, 1985

THAILAND

Frigate Makut Rajakumarn received a Krupp-Atlas DSQS-21B sonar in place of the original U.K.-built suite during 1985 repairs after a gas-turbine fire. PSMM Mk 5-class patrol boat Katang (7) reported commissioned 14-10-85.

TURKEY

Additional photo coverage, courtesy Dipl.-Ing. Hartmut Ehlers and L. & L. Van



Ikinei Inonu (533) - GUPPY-III class

H. Ehlers, 1-85

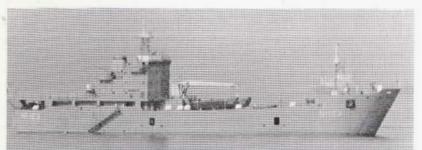


Savestepe (D 348) — with quadruple decoy RL atop pilothouse and hangar (IV × 4) L. & L. Van Ginderen, 11-85



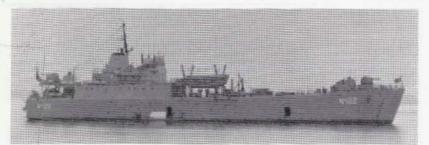
Mehmetcik (N 115) - mineplanter

H. Ehlers, 6-83



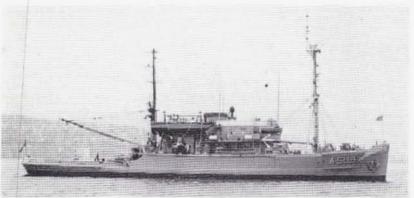
Sarucabey (NL 123)

H. Ehlers, 1984



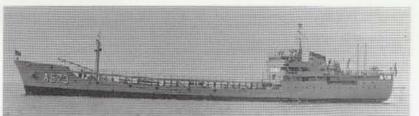
Cakabey (NL 122)

H. Ehlers, 4-84



Işin (A 589)

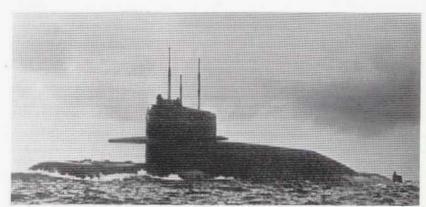
H. Ehlers, 5-83



Binbaşi Saadettin Gürçon (A 573)

H. Ehlers, 1-85

USSR



Delta-II ballistic-missile submarine

U.S. Navy, 1985



Admiral Yumashev (Kresta-II class)

U.S. Navy, 1985



Osmotritel'nyy (Sovremennyy class) en route to the Pacific PHC J. Kristoffersen, USN, 10-85

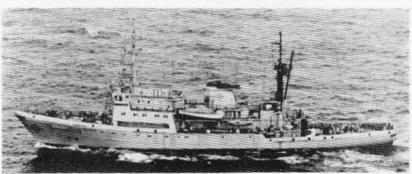


Imeni XXV Sezda K.P.S.S.— Ivan Susanin class KGB patrol icebreaker
U.S. Navy, 1985



Frunze (Kirov class) en route to the Pacific

U.S. Navy, 10-85



Alatau - the third naval Ingul-class rescue ship

U.S. Navy, 11-85



Dauriya — Vytegrales-class fleet support ship, with deckhouse over third hold and tracking radars above the bridge U.S. Navy, 1985

Arkansas (CGN 41)—with two Tomahawk armored box launchers replacing the helicopter facility at the stern. White rectangles on deck fore and aft mark helicopter vertical replenishment hovering areas.

G. Arra, 10-85

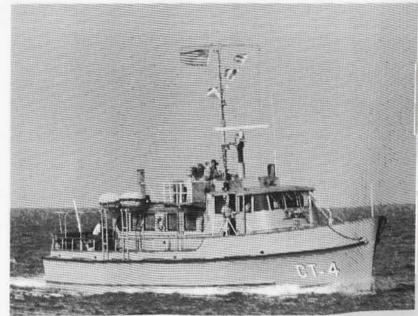
USA

A new "low-cost torpedo" is to be developed for submarine use against lower-value targets. It is hoped that the weapons will cost about one-tenth the price of a Mk 48 ADCAP weapon. Speed is estimated at 35 kts for 3 nautical miles.



LCAC-2, leading LCAC-1

Bell-Halter, 1985

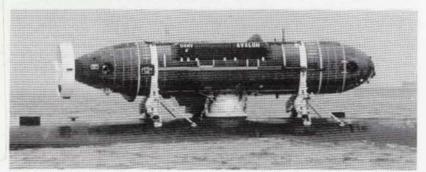


CT 4—the first YP training craft to be redesignated a COOP mine-disposal training craft
G. Arra, 9-85



Side-loading warping tug, with portable deckhouse, winch, and two diesel outdrives

G. Arra, 1985



Avalon (DSRV 2) — Deep Submergence Rescue Vehicle, aboard submarine William H. Bates (SSN 680) G. Arra, 1985



Arco (ARDM 5) - fitting out at Seattle

G. Arra, 10-85



65-foot torpedo retriever 4

G. Arra, 8-85

D: 34.8 tons (35.2 fl) S: 18.7 kts Dim: 19.80 × 5.25 × 1.17 M: 2 G.M. 12V71 diesels; 2 props; 1,008 hp (800 sust.) Range: 280/18 Electric: 10 kw Man: 6 tot.

Remarks: Aluminum construction. Can recover up to 5 tons of weapons. There are also utility boat and personnel boat versions of this design, with the latter having a low deckhouse aft.



72-foot torpedo retriever Mk 2

G. Arra, 10-85

D: 53 tons (fl) S: 18 kts Dim: 22.17 × 5.18 × 1.68 M: 2 diesels; 2 props; 1,000 hp Range: 450/18 Man: 6 tot.

Remarks: Wooden construction. Can carry up to 10.8 tons of weapons retrieved via a stern ramp. Obsolescent, to be replaced by new Marinette-built units. Craft in photo above modified to a non-torpedo retrieval role.



Retriever (DR 1)

G. Arra, 9-85

D: 125 tons (fl) S: 22 kts Dim: 30.02 × 7.92 × 2.13 M: 4 G.M. diesels; 4 props; . . . hp Man: 1 officer, 17 men

Remarks: Former PT 109, launched 7-8-50 by Electric Boat, Groton, Ct. Later named Guardian for Secret Service use as chase boat for presidential yacht. Used at Little Creek, Va., since 12-74 as a drone target control and recovery craft. Aluminum construction.



Chaparral (TWR 7)

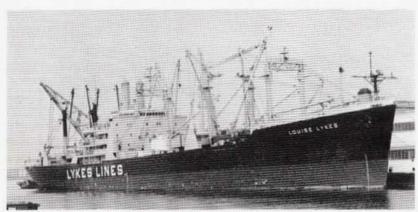
G. Arra, 10-85

Remarks: Employed at San Diego. One of two 85-foot torpedo retrievers completed in 1976 by Tacoma Boat.



Henry J. Kaiser (T-AO 187) - shortly after launch

U.S. Navy, 10-85



Louise Lykes-Military Sealift Command charter

G. Arra, 3-85

During January 1986, the Navy purchased an additional 13 merchant ships for the Maritime Administration-controlled Ready Reserve Force. These included roll-on/roll-off vehicle cargo ships Paralla (1971, American Automar), Lipscomb Lykes, Charles Lykes (both 1976, Lykes Brothers Steamship Co.); Barber Tonsberg, Barber Priam, and Barber Taif (all 1979, Barber Steamship); lighter-aboard-ship (LASH) barge carriers Delta Mar (1973), Delta Sud (1973), Delta Norte (1973), and Delta Caribe (1971—all United States Lines); and Sea Bee barge carriers Almerica Lykes (1972), Doctor Lykes (1972), and Tillie Lykes (1973—all Lykes Brothers Steamship Co). The ships with corporate names will probably be renamed in the MARAD "Cape" series during their layup overhauls.



Cape Domingo - Ready Reserve Force Ro-Ro

MSC, 12-85

LATE ADDENDA

Through 28 February 1986

AUSTRALIA

Fleet replenishment ship Success (AOR 304) scheduled to commission 15-4-86.

BRAZIL

Two Inhauma-class frigates were ordered 1-12-85 from Verolme Brazil, Porto Alegre.

CANADA

Coast Guard: Construction of at least two Type 1000 ice-capable buoy tenders and one Type 900 navigational aids tender is to begin in 1987–88. Samuel Risley (Type 1050) entered service 5-85. Martha L. Black (Type 1100) entered service in 8-85 and sister George R. Pearkes in 11-85. Type 800 small navigational aids tenders Île des Barques and Partridge Island entered service 9-85, while the similar "Type F" tenders Île Saint Ours and Caribou Isle completed later in the year. Current search-and-rescue craft programs include three Type 100 craft to replace Osprey and Bittern, two Type 200 ice-strength-ened rescue craft, two Type 300 self-righting lifeboats, Cap Goelands and Souris, completed 1985 by Hike Metal, Wheatley, Ont., and to replace Spume, a Type 400, Kevlar-hulled boat is being built: 22.74 (19.00 wl) × 6.12 × 1.50. Large icebreakers John A. Macdonald and Louis S. St. Laurent are to be given life-extension overhauls, including new engines and a new bow shape in the latter. Rescue cutter Alert is also to be modernized, while Sir Humphrey Gilbert, Simon Fraser, and Naruhal were undergoing modernization 1985–86; Fraser has been reconfigured for search and rescue, with additional lifeboats but losing her hangar. A very large arctic icebreaker is again being contemplated, at the possible expense of naval programs.

CHILE

A new transport to replace Aquiles was ordered 4-10-85 from ASMAR, Talcahuano, and will also be named Aquiles:

D: 4,500 tons (fl) S: 19 kts Dim: 97.0 × 17.0 × 6.0

A: . .

M: Diesels Man: 80 tot., plus 250 troops

Remarks: Two holds, served by one electric crane. Helicopter deck. Will be convertible as a hospital ship for disaster relief.

CHINA

A program to construct British Cougar Marine 14-m patrol craft in China, using Cougar-supplied moulds has commenced. The craft will be powered by two Soviet-design M50-series diesels, for 2,400 hp and very high maximum speeds. The moulds for the gass-reinforced plastic boats are to be delivered 8-86.

GREAT BRITAIN

"County"-class guided-missile destroyer Glamorgan (D 19), frigates Leander (F 109), Galatea (F 18), and Yarmouth (F 101), Oberon-class submarines Orpheus (S 11) and Oberon (S 09), "Ton"-class minehunter Bildeston (M 1110) and sister minesweepers Alfriston (M 1103), Bickington (M 1109), Hodgeston (M 1146), Walkerton (M 1188), and Stubbington (M 1204), and survey ship Hydra (A 144) are to be decommissioned during 1986; some of the mine countermeasures units and Hydra will be maintained in reserve, the remainder stricken.

INDIA

One Sea King Mk 42 helicopter was lost 1-86.

INDONESIA

Netherlands Navy Van Speijk-class frigate Tjerk Hiddes (F 804) will be transferred 1-10-86, followed by Van Speijk (F 802) on 1-11-86, per a 10-2-86 agreement; options were also taken to purchase sisters Van Galen (F 803) and Van Nes (F 805), for delivery in 11-87 and 2-88.

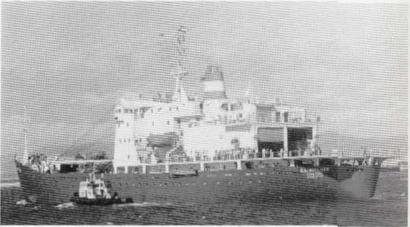
NETHERLANDS

Jacob Van Heemskerck (F 812) commissioned 15-1-86. Hellevoetsluis (M 859) launched 13-12-85. Two (and possibly four) Van Speijk-class frigates to transfer to Indonesia (see above).

SAUDI ARABIA

Two 27-m patrol boats, possibly for the Coast Guard, were ordered late in 1985 from Abeking & Rasmussen, Lemwerder, West Germany.

SOUTH AFRICA



Agulhas - naval-manned research ship

L. & L. Van Ginderen, 1-86

USA

Characteristics for the new Coast Guard icebreaker, to be delivered 1992, include:

D: 15,951 tons (fl) S: . . . Dim: 137.47 × 26.82 × 9.94

A: 2/12.7-mm mg (I × 1)—helicopters

M: 4 medium-speed diesels, electric drive; 2 props; 30,000 hp

Endurance: 80 days Man: 124 men plus 30 scientists

REMARKS: To be capable of breaking 1.4-m ice at 3 kts continuously. To replace "Wind" class.